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No. 60, Prince's-street, Edinburgh ..... Mr. J. Hippolyte Blanc, R.S.A., Architect.
West Front of St. Agatha's Church, Sparkbrook, Birmingham ..... Mr. W. H. Bidlake, M.A., Architect.
Central Electric Supply Company's Power Station, Grove-road, N.W. ..... Mr. C. Stanley Peach, F.R.I.B.A., Architect.
Lincoln Cathedral, South Porch ..... Drawn by Mr. H. W. Cotman.

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School Planning.

THE history of school planning in England may be divided into three epochs. The first is that of the dark ages, which in our schools only terminated some twenty years ago. The mediæval plan was of the simplest, and survives in many an old grammar school to this day; among others, in Shakespeare's school at Stratford-on-Avon. The school is simply one large room—the headmaster on a throne at one end; the second master, his *vis-à-vis*, at the other; ushers at intervals. This is in the main the plan of Doncaster Grammar School as rebuilt under the influence of the late Dr. Vaughan, when Vicar of Doncaster, and of Bristol Grammar School, where the plan was, we believe, laid down by the headmaster, Dr. Caldecott.

The second period is that of the school with classrooms planned unscientifically; designed to provide what was thought an artistic elevation—that, we need hardly say, was nearly always Gothic; inconvenient, dark, ill-ventilated, insanitary, and expensive. This period has not yet closed.

A third period, however, has commenced—it is that of scientific planning; an outward and visible sign of it is Mr. Clay's large book.* It embraces schools of two definite types, with vertebrate plans, conditioned by the different educational systems of England and the Continent; that of the Continent producing a school of the strict corridor type, its hall mainly an *objet de luxe*, quite small; making no show externally; rarely used. This is the normal type of the great day schools of France, Germany, and Scandinavia. The second is the central hall or hall-passage type, as recently developed in our own country, where the hall is in constant use every day of the year.

There is besides a hybrid type of plan; an attempt to combine the central hall with the corridors, which the central hall was intended to supersede. It is the hall-passage type but half accepted, a weak and feeble compromise not destined to endure, and so we may dismiss it without further mention. Of the other two, the corridor type of school may also be dismissed. It is no doubt the most convenient and least expensive, where, as in Germany, each class is an entirely independent school for twelve whole months at a stretch. We fortunately have a much more elastic type of organisation than this in our secondary schools, and require a complex system of classrooms for which the entirely regular and symmetrical plan of the Continental school does not and cannot provide.

Our Central Hall plan comes without doubt from the elementary schools. It is even said to have been more or less of an accident originally. An elementary school happened to have been built in the form of a quadrangle. Later, it suggested itself that the inner court thus formed should be roofed over. There was the central hall plan at once. The next step is seen in a well-known school in Stepney, the Ben Jonson School, built in 1872, by Professor Roger Smith, for the London School Board. It was born before its time. Its plan was condemned by the School Board and the School Board's Architect; and the hands of the architectural clock were put back. The next—and a very important—step was taken by Mr. E. C. Robins, who built the great Grammar School at Bedford, with a vast central hall and classrooms, three stories high. Since then the future of the central hall type is assured. The London School Board and its Architect recanted; and the Educational Department threw all its influence into the scale to promote its adoption; even going so far as to bribe school authorities to provide a central hall by offering an additional allowance for the purpose of 15s. per square foot.

It is, indeed, only right to say that the influence of the Educational Department on school planning was from the first of the most progressive and enlightened character it had the services of able experts, and adopted their recommendations. It is only necessary to compare the compact planning of the Dewsbury Grammar School (page 181 in Mr. Clay's book), or the Wimbledon High School for Girls (page 190) with the amorphous dispositions of such a plan as that which faces page 193, to see at a glance how greatly the advantage is on the side of the former. This is not a pious opinion merely, but is borne out by the experience of those whose judgment is final; those who have used the schools; headmasters and head-mistresses. Dr. Philpotts, of Bedford, "spoke warmly in favour of the general scheme and arrangement of the building. Standing on the platform at the end of the great hall, practically the entire school is under his eye; the building is extraordinarily compact, and any point in it can be reached in a few minutes." The High School for Girls at Sheffield "has been found extremely convenient and well adapted for its purpose." In the Wimbledon High School for Girls, "the ease of supervision and the compactness of the building are highly spoken of; and from an economical point of view the superiority is marked." Nor is the economy of money all. It was found recently at a very large school *not* built on the central hall principle, that prayers occupied five minutes; but that it took twenty minutes to get the pupils into and out of the hall. The school hours per week were twenty-four; it follows that every week one twelfth of the time available for lessons was lost in assembling for prayers; to say nothing of waste of time and confusion at every change of lessons in passing to and from distant classrooms. It has been objected to the plan that when the hall is used for examinations it is distracting to have pupils passing round it. But surely it should not pass the wit of architects to erect iron uprights and bars

* "Modern School Buildings: Elementary and Secondary." Being a treatise on the planning, arrangement, and fitting of day and boarding schools. By Felix Clay, B.A., Architect. With nearly 400 illustrations, including plans of eighty-five schools. London: Batsford. 1902.

carrying curtains, which at ordinary times would be looped up, but which would be drawn together to screen off the central area of the hall when needed as a sanctuary for an examination. Indeed, in some of the halls the uprights are already provided in the form of colonnades running round three or four sides of the hall and carrying galleries—*e.g.* Bedford Grammar School (page 177).

The scope of Mr. Clay's book is wide. He deals with secondary day schools, training colleges, boarding houses, elementary schools, higher elementary schools, school hygiene, science laboratories, gymnasiums, infirmaries, and all the numerous appurtenances to that complex organism, the modern secondary school. To the planning of elementary and technical schools he rightly gives less space. They have been treated already by Mr. Robson and Mr. Robins. For the former, moreover, there are the admirable rules issued yearly by the Board of Education for the planning and fitting of public elementary schools. In secondary schools he has the luck, rare nowadays for an author, to have struck virgin soil. His book is the first, as it is likely to remain for some time the leading work, on the architectural requirements of secondary education. For the first time school architecture is brought into line with that of hospitals, infirmaries, and asylums. In Mr. Clay's hands, another highly specialised sub-genus of architecture is created; and in architecture, as in every branch of science, specialisation connotes progress.

Let us turn to his method of work. He begins by assuming that the object of a building is to enable those who use it to do their work with the greatest efficiency and with the least expenditure of time, temper, energy, and money. Then he goes on to consider what secondary education is; what are its aims and ideals; how far the architect can help or hinder them. In the days of old the plan of a building used to be adapted to its external appearance. But listen to Mr. Clay's doctrine: "What we have to consider is the adaptation of the plan to the organisation of the school, and how far it assists to make the working of it efficient, easy and economical; how much the wear and tear is reduced for the head master or mistress; how much time is saved or wasted by classes changing their room and by the principal in going his rounds. To what extent or with how little trouble he can know what is going on in any particular place, or supervise the school during general movements; whether elaborate sets of staircase, corridor, or cloakroom rules are necessary to prevent disturbance or crushing or petty larceny; fruitful opportunities for which are provided by ill-designed corners, awkwardly situated doors, or narrow and dark places. The ideal plan arranges matters in such a way that all parts are so well lit and so easily supervised that there is no excuse for disorder and no need for rules." Truly another Daniel come to judgment! And after discussing planning generally, he enters into "the question of the extent of the accommodation required; the uses and purposes of the different rooms; and the form, dimensions, and position that have been found best adapted to serve those purposes; since the plan of the whole school can scarcely be understood without a clear idea of the purposes which the various parts of it are intended to serve." A more admirable statement there could not be of the subordination of plan to purpose; and recognition of that subordination characterises every page of the work, making it practical and valuable in the highest degree. It is, indeed, amusing to see how comparatively little the author troubles himself about the elevations of the building or those artistic considerations which used to be all important. Mr. Clay's highest flight is to remind us that the difference between a building devoid of all architectural features and built of nothing but stock brick with slate roofs, and one in which attention had been given to style and material, is less than 5 per cent.; an estimate which is confirmed by an American architect.

One has only to turn over the pages of the book at random to see how useful it will be, not only to architects, but to the governors and clerks of every Educational Board in the kingdom. And as these Boards will be indefinitely multiplied under the new Education Act, it is calculated to be of the very greatest service in the erection of the new secondary schools which will no doubt soon spring up throughout the length and breadth of the land, as they did in Wales on the passing of the Welsh Intermediate Education Act.

We may turn to examine some of Mr. Clay's recommendations in detail. As to sites, schools ought not to be located on "low-lying ground, or places ever liable to flood." That ought to have been written before Warwick Grammar School was built close to the Avon. Wellington, on the other hand, is built on sand in the pine woods; Roedean on the high chalk cliffs of Sussex, facing south to the Channel; the new Welsh schools are placed well out of the towns on high ridges, open to every wind that blows, and with glorious panoramic views; where also large playing fields are obtained cheap, *e.g.*, Carnarvon, Bangor, Barry. "Schools should not be built level to a noisy street to make an imposing appearance," *e.g.*, Coborn School for Girls on the Whitechapel-road; where, with a temperature of 80 deg. in the shade in July, it was necessary to keep every window closed in order that the answers of the pupils to the inspector's questions might be barely audible. "The best aspect for classrooms is from east to south-east"; and for the hall, therefore, when surrounded on three sides by classrooms, from west to north-west. Reading school consists of a long range of classrooms with a corridor on the east. These classrooms are intolerably hot in a summer afternoon; all that was needed was to reverse the position of corridor and classrooms. Again, nominal is not the same as real accommodation. "A building nominally capable of holding 300 can hardly be worked comfortably when there are many more than 200 pupils"; *e.g.*, the well-planned Grammar School of Bedford has accommodation for 1,030; but 800 boys are quite as many as can conveniently be managed in the building. In St. Paul's, West Kensington, the difference rises to a maximum. "Winders, or elliptical staircases, should under no circumstances be allowed." But a newel staircase has recently been built at Marlborough, in a block of new classrooms. The valuable point is made that "the size and shape of a classroom largely depends on the size and form of the desk employed, whether single, double, or compound"; and that therefore the type of desk must be settled, not after the school is built, but before. The author does not give a well-known definition of a dual desk which, we believe, is attributed to Dr. Walker, of St. Paul's; we make him a present of it for his next edition. "It is a desk in which one boy cribs, and the other is cribbed from."

Mr. Clay suggests a classroom, 30 ft. by 20 ft., to accommodate thirty boys. It should be much more of an oblong. Moreover, not much more than half of the floor space should be occupied by desks. A much better type is seen in the Dewsbury plans (page 180), There is no sweeter music to a head-master's ear than the teacher's cry, "Come up to the blackboard." Mr. Clay assumes that the boys always remain at their desks. Blackboard work cannot be done in that fashion. It is an intense relief too, and one physically all-important, that the boys should sometimes stand. It is hard to have to sit through a half hour's sermon; how would Mr. Clay like to have to remain seated five hours a day and every day? It is good enough for German boys (see plan of a Real Schule, page 198). Another weak point is that he does not emphasise the importance of spacious gangways among the desks. Everything should be done to encourage the master to go among the boys; giving them individual attention. He is only too much tempted to stay on his throne, instead of exercising the unceasing individual supervision which is necessary to secure, for instance, in mathematics, good handwriting, neat working, the use of expeditious methods, precision, and accuracy. His classroom also is much too low. He considers 13 ft. ample. It may be so for lighting purposes; certainly it is not for ventilation. Mr. Clay assumes, of course, perfect ventilation. That is where he goes wrong. Later on, when he treats of those subjects specifically, he admits that all systems of ventilation and heating are imperfect. There should therefore be a large cubic space of air above the pupils' heads, and if there are open fanlights high up in the wall, opposite the windows, the air can be changed above without bringing down draughts on the heads of the pupils below. It is to be regretted that the author has used his influence to diminish the cube of the classroom. He is in direct contradiction with the two School Officers of Health whose opinions he quotes (page 88). All the rest of the building—the assembly-rooms, dining-hall, administrative block—everything exists for the sake of the classroom. The architect very properly wishes to give us imposing halls, towers, and cupolas; but he must not get the bricks for them by cutting down the cube of the classrooms. Compare the tiny classrooms on page 223 with the gigantic hall between them; see also plan on page 232, where note the wasteful corridors. The remarks on windows are excellent. "No transoms or heavy mullions or broad window piers should be allowed"; but why not abolish piers altogether, and revive the continuous lights of a Norfolk fifteenth-century church, or of Hardwick Hall, or of a Cheshire half-timbered mansion? A continuous blackboard all round the room is

rightly recommended; but the master will require a movable one as well.

Cloakrooms should be dispensed with in boys' schools, and golf lockers placed round the hall, as at the Mercers' School in Holborn and Hull (page 154). A special section should be devoted to the methods necessary to minimise dust in boys' schools. It is dust, not talking, that gives the masters the succession of bad throats which prevails every winter. Lighting should be calculated for the darkest days in winter. "At Birmingham in dark buildings the number of girls who were obliged to wear glasses rose to 25 per cent. In a new school, well lighted, the percentage fell to twelve." The author points out clearly the defects of the "Plenum" system of ventilation. It is adopted in the new hospital at Birmingham, where the windows are made *not* to open; the Birmingham people say that when they want to breathe fresh air they go round the wards of their hospital. In summer, however, it seems ridiculous to keep the windows closed, and employ a man and a steam-engine to pump in fresh air, when all that is necessary is to open the windows wide, top and bottom, and let the boys and girls live in it all day long.

The subject of laboratories is, at present, not susceptible of final treatment. The methods of science teaching have not yet been standardised, like those of classics and mathematics; every science master goes his own sweet way. But there is light and leading in important papers by Professor Armstrong and Mr. Garnett and Principal Wells. Gymnasiums are treated inadequately; the author should have seen the gymnasiums in actual use in the secondary schools of Christiana and Stockholm. One great blunder in this country has been to imagine that the gymnasium should be tall enough to hold a shipmast, as at Oxford and Harrow, the cost thereby being increased enormously. Really, what is wanted is a very long but low building, with not one long rope and long pole to climb, but ten short ropes and poles. Another valuable piece of apparatus is a long, horizontal ladder; also a long row of suspended rings. On all these the exercises are safe, and they can be used by several pupils at once. Apparatus that can be used only by one pupil at a time is ill adapted for class instruction. Every gymnasium should have two divisions; in one should be placed the dangerous apparatus, such as the parallel bars and vaulting-horse, only to be used under supervision. Mr. Clay recommends that the gymnasium should be heated; it would be a poor instructor who could not keep his class warm without artificial aid. A pent-house roof on two or three sides of the walls of the playground forms an admirable and cheap gymnasium. One side of the square may be glazed for use in bad weather Children in elementary schools are to have a playshed. Excellent reasons for this are given on page 317; but on page 163 we read that it "can hardly be considered an absolute necessity in a (secondary) school." The author, like every architect, whether he is composing books or buildings, should bind on his brow that great Christian maxim, "Put yourself in his place." Let us imagine—that is where Mr. Clay sometimes fails, he does not imagine enough—that we are boys. We come to school early for play, but it is bleak and wet, and a nor'easter is blowing. Should we consider a playshed hardly an absolute necessity? It would have been most beneficial to the author if, like the father in "Vice Versa," he could have been turned into a boy for the time being, and at another time into a master—in the latter case he would have designed better classrooms. As boy, in the midday interval, he would have rushed to the urinals; but for the school of 100, Mr. Clay has provided only 6. What are the 94 boys to do? Wait their turn in queue, or give it up? So with the closets. Mr. Clay provides 3; a good many applicants will fail to obtain seats. Or there has been football in the playground; 100 boys ought to wash their hands; 93 will find themselves without a basin. Had he been a boy, he would have known that all these necessary operations come on, for the most part, all at once. On another sanitary point Mr. Clay is not sound; he says that "there should be little risk in having the closets attached to the main building." Most certainly they should be completely detached; though they need not counterfeit the form of a Gothic chapter-house, as in one public school; a cynosure of wondering eyes, and the first object of inquiry on the part of the headmaster's visitors.

Space forbids to discuss the subject of boarding schools. Mr. Clay has been rightly advised in condemning cubicles and in recommending a return to the open dormitory. Boarding-school planning is really an entirely new art. It is astonishing to see the elaboration and carefulness of the arrangements at the new schools at Roedean; a building, moreover, which is as handsome within and without as it is convenient. Here, as in the case of the Ecole Monge at Paris, the course recommended by Mr. Clay has been followed; the school has been planned by the architect in consultation with the head mistress. As he rightly says, the head master or mistress should always be appointed before, not after, a new school is built.

It would have been well to illustrate the Ecole Monge; also the large Wesleyan boarding school lately erected near Belfast. Before designing the latter, the architect and the headmaster were sent by the governors on tour together round the English secondary schools, and reported, we remember, little but barrenness in the land. A more serious omission is that of the County Intermediate Schools of Wales. Since the passing of the Act some ten years ago the number of these Welsh grammar schools has increased enormously—from something like twenty to nearly one hundred, we believe. The latter schools are criticisms on, and improvements on, the earlier; they are well worthy of study. And the treatment of the dual school, which is the usual type, can only be studied in Wales.

Mr. Clay has produced a work of real and lasting value. It reflects great credit on his industry, ability, and judgment, and will be of very great value in the millennium of Secondary Education, which is beginning, not too early, to dawn on the horizon.

WILLING'S "PRESS GUIDE."—We have received from James Willing, jun., Ltd. (125, Strand), a copy of the thirteenth annual issue of their excellent "Press Guide." The work which is published at 1s., is well arranged in alphabetical order, and shows at a glance the name, address, &c., wanted of any newspaper, journal, &c., published in the United Kingdom.

THE LOAN EXHIBITION AT BURLINGTON HOUSE.

THIS is a landscape year. The Academy have collected a number of fine landscapes, some of them well known but not on that account the less welcome, by the masters of the eighteenth and early nineteenth century, together with examples of the work of some eminent recent landscape painters now deceased; and the collection is of the greatest interest as an illustration of various methods of landscape painting. Following their recently-adopted principle of illustrating the works of one special artist, they have filled one room with pictures by Cuyp, in addition to two or three stray examples scattered about among the other works. Figure pictures of some importance are not wanting; but landscape is the prevailing element in the exhibition.

One result of the present exhibition will be to raise many people's estimate of the value of Richard Wilson. The "Lake Scene" which stands as No. 1 in the catalogue, is a noble work, broad in style and rich in colour, and at first sight almost suggests the idea of being an early Turner, save that the colouring is warmer than is usually the case in Turner's early work. Gainsborough's "Market Gardener" (2), if it be a Gainsborough (which has been questioned) would not add to the painter's reputation. On the other hand there are in the same room two De Wints, of unequal merit (3 and 5), of which the first, "Landscape with Rainbow," is difficult to see owing to the glass and the dark tone of the picture; but the second, called simply "Landscape," is a truly grand picture—what may be called the monumental style of landscape-painting. There is hardly anything, it is true, of the real tone of Nature in it; it is Nature translated into the De Wint scheme of colour; but that is the instructive part of it. For it illustrates splendidly the fact that half the interest of landscape painting lies not in Nature, but in the individuality of the artist and in his mode of interpreting Nature. The composition here is grand; the colouring and the light are not really those of Nature, speaking absolutely; but relatively everything is in its place and in keeping; it is a supreme work of art, not imitating nature, but based upon nature. Between these two hangs Constable's large and bold, but not altogether satisfactory painting, "The Opening of Waterloo Bridge" (4), very finely though perhaps rather theatrically composed, with a grand sky and a great look of spaciousness about it, but losing something of its effect from the conventional treatment of the water, which one recognises as water from its position in the picture rather than from its treatment in detail. Gainsborough again does not come out well in No. 8, "Going to Market"; the trees are really abominable, a kind of conventional drawing-master's trees; if this sort of meaningless scribble was actually accepted by Gainsborough's contemporaries as representing trees, it shows how much further we have got in modern times in regard to the observation and representation of nature. A painter of the present day hardly dare exhibit such tree-painting as this; he would certainly be condemned if he did. And Turner's "Boats carrying out Anchors and Cables to Dutch Men-of-War"

(12; exhibited in 1804) is another work which tends to flatter our convictions in regard to modern art; a bad sea, and bad shipping, not so much redeemed as in some other instances by a breadth and truth of atmospheric effect. Constable is further represented in this room by the Academy's well-known picture "The Lock" (8) and by a slightly different version (9) belonging to Sir C. Tennant; also by the Dedham picture with the leaping horse, (14) likewise the property of the Royal Academy. Cotman's coast picture (18) called "St. Malo" (on what authority we know not) is a fine work in a somewhat conventional way, but one cannot help thinking that the effect of the yellowish toned church tower and other buildings silhouetted against a mass of dark cloud is a rather cheap one, somewhat savouring of scene-painting effect.

Cotman comes out better in Gallery II., in his really fine picture "Heath Scene" (36), which at first sight suggests Crome, but is more powerful in its opposition of light and dark than Crome generally was. It may be questioned whether Crome has not been over-rated; his effects (or his effect, one might almost say) were limited and much repeated; and his "Mousehold Heath" (24) in this room, with waggon and horses, is a very crude affair. His small landscape (19), which one would not at first sight attribute to him, shows him in another and rare mood, and is a fine little work. It is a curious contrast to turn from the Cromes and Cotmans, with their severe style and limited range of colour, to such a thing as the late Turner, "Modern Italy" (23), belonging to the Corporation of Glasgow, unreal but beautiful in effect, and a glitter of light and colour. His "Harlech" (29) is equally beautiful in its way, and a comparison of the two shows in a striking manner the distance which Turner had traversed in his art during the nineteen years which separate the two works. Among the pictures in this room no one should overlook the small one by De Wint hung in a corner—"Old Houses, Lincoln" (39), a thing entirely different from what we usually associate with this artist's name, but an exceptionally powerful example of the picturesque treatment of old buildings in art. Bonington's two pictures in this room (20 and 40) are interesting as examples of a conventional mode of dressing up a scene with faint silvery distances and adroitly contrived lights on the foreground figures; it is a cooked effect, but so delicately and charmingly done that one is tempted to forget its artificial character.

In the large gallery is what is perhaps Constable's greatest work, the "Salisbury Cathedral" (72), now called "The Rainbow." As with the De Wint in Gallery I., so with this (though in a very different way), we cannot really say that Nature looks like this; the effect is somewhat forced; but it is Constable's method of treating Nature, and it is in his genius, not in the scene itself, that the powerful effect really lies. The same may be said of Muller's wonderful bravura sketch on a great scale—for that is what it really is—"Eel-bucks at Goring" (115); the one which he said was "Left as a sketch for some fool to *finish* and ruin." As such it is a wonderful performance, but it may be questioned whether both Muller and his friend Constable do not sometimes leave one with the impression that a little more definition of foreground objects is desirable in anything which is to claim to be a picture. Such works as this, after all, are great not so much because of the sketchiness as in spite of it. Linnell's great and, in his own lifetime unrecognised genius, is seen at its best in Gallery V. in his extraordinarily powerful picture "Storm in Harvest" (109), a picture which always seems to remind one of the "storm" in Beethoven's "Pastoral Symphony"; both the colour-painting and the tone-painting are characterised by that effect of terror which accompanies a thunderstorm of the first order. But Linnell's art is shown as perfectly, though in a very different way, in his exquisite little picture of "Hampstead Heath" (112); what an instructive contrast, too, is this bit of genuine nature to de Loutherbourg's piece of sheer scene-painting (111) next to it. A perfect little landscape, too, is David Cox's "The Thames at Purfleet" (106), so simple in composition, yet so artistically complete. De Loutherbourg's scenic proclivities are seen again in "A Wreck" (124), with its cloth or pasteboard waves; though even these are better than the sea in Callcott's large painting called "Dutch Fishing Boats" (119). It seems almost inconceivable in the present day, that Academician painters of reputation should have thought, or pretended to think, and have been able to persuade their admirers, that the sea ever looked or behaved like that. But it is good to see this kind of thing sometimes, if only to realise how far superior are our modern English painters to their predecessors in truth of representation, in some classes of subject at all events.

The collection of works by Cuyp in Gallery IV. serves to show, what one knew already, that a little of Cuyp goes a long way. In his landscapes Cuyp had but one effect, and that an artificial one, which he repeats again and again till one is weary of it. His reputation was to a great extent an exaggerated and factitious one, accepted from habit in days when people thought less about the objects of painting than they do now; and this collection of a number of his works only brings out his inherent weakness as a landscape painter. The one exception is the river scene, "View on the Maas" (92), with the lazy-looking craft becalmed—

> "Ships softly sinking in the sleepy sea—"

as Crabbe expresses it in one of his best lines. This work represents the best that Cuyp could do, and is far superior to the landscapes.

In the water-colour room (so distinguished in the Catalogue, though not at present devoted to water-colours) is a collection of works of deceased English landscape and sea painters of more recent date, which is one of the most interesting departments of the exhibition. Here we have some of the finest of Henry Moore's sea-pieces; some of Brett's—not however any one of his most important works, unless perhaps we count the "Norman Archipelago" (127) as such; the best bit of painting by him is perhaps the foreground in "The Rivals" (147) in the Black and White Room; and a considerable collection of the works of the late Mr. Corbet, which run rather into one line of effect, but indicate that he would have become an important figure among English landscape painters had he lived to develop his art further. The Black and White room contains a number of his smaller studies. And along with the powerful works in the Water-Colour room appear also some of the mannered and highly-finished landscapes of that former popular favourite Vicat Cole, whose works are here reduced to their proper level, and after the productions of Constable, Muller, and Linnell, and compared with some of the finest of the later landscapes in the water-colour room, give one almost the impression of chromo-lithographs, so tame and mechanical in effect are they. Perhaps one of the very finest things in this room is a broad and powerful landscape by Henry Moore, "Glen Orchy" (130), showing that a great sea painter can also be a great landscape-painter on occasion. This one picture is worth the whole roomful of Cuyps.

Figure pictures are not very important this year, the strength of the exhibition being, intentionally, in landscape. We have however Reynolds's well-known "Mrs. Pelham" (69), and a portrait of the Countess of Powis (30) of which the colour was once very fine but has probably much faded; some fine portraits by Antonio More, Rubens, and Frank Hals, and Tintoretto's large and very uninteresting picture, from Hampton Court, "The Nine Muses in Olympus" (57): (should it not be "on Olympus"?), a picture which suggests that Tintoretto's is another exaggerated reputation. It may be questioned whether any of the ancient figure pictures exhibited are so powerful and so interesting as Etty's "Sleeping Nymph and Satyrs" (114), which was to be seen a good many years ago at a former loan exhibition. The picture is coarse in subject and in the idea suggested, but it is unquestionably the strongest thing Etty ever did; and it is noticeable that it was his diploma picture, the artist not having adopted what seems to be the modern practice with a "diploma picture," of putting off on the Academy some small and unimportant work not likely to be of saleable value! In view of its subject, indeed, the "Nymph and Satyrs" was not likely to be very saleable to the English public; but at all events the painter put his best into it, as the testimony of his claim to academical honours.

The collection of illustrations of the excavations at Knossos, which occupies one room, we will speak of separately, as it stands on entirely different ground from the rest of the exhibition.

NOTES.

Municipal Trading. WE would commend to the attention of our readers a very interesting paper by the Hon. Vicary Gibbs, M.P., read before the United Property Owners' and Ratepayers' Association of Great Britain, and published by the Industrial Freedom League, on the subject of municipal trading. Mr. Gibbs fears his views, which are opposed to the extension of commercial enterprise on the part of Corporations, are not in accordance with the trend of modern opinion, but we trust he is mistaken in this, and that the real fact is, as was stated by Sir Edward Clarke in his recent speech before the Municipal Society, that public interest has not at present been aroused in this all important question. Many of the principal objections to an extension of this system, which appear in the paper under discussion, were pointed out briefly by us in these pages in our "Notes"

on this subject on September 20 and December 13, and in a "Note" on the increase of local taxation, which appeared on August 23, and we need not here recapitulate them. Mr. Gibbs deals with the whole subject in a very liberal spirit, with which we are in entire accord; he admits certain forms of enterprise are proper subjects for municipal management, and that no hard-and-fast line can be drawn, but the particular requirements and circumstances of each case must be regarded. He, however, lays down certain general principles by which the proper sphere of municipal enterprise may be determined, which may be summarised thus:—The product dealt in should tend to the direct advantage of the whole body of the ratepayers; the undertaking should be simple of conduct and not speculative, or one subject to rapid development or frequent change, and should, moreover, be one not such as to be readily undertaken by individual enterprise; and he instances sewage works as a good example of legitimate municipal enterprise. When Mr. Gibbs, however, enumerates the advantages of municipal enterprise, we join issue with him on one head, for he asserts the consumer can more easily make his complaints known and obtain redress from the public authority than from the individual. We should submit this was opposed to all experience, and, moreover, we have in former papers pointed out that as the law at present stands Municipal Authorities enjoy certain advantages in litigation by virtue of the Public Authorities Protection Act, 1893, which the Legislation can never have intended to give them in their character of purely trading companies. Mr. Gibbs deals in an instructive manner with Municipal Finance, and in especial takes exception to the system of borrowing by short bills, which he points out may be the cause of national danger in a time of financial crisis. His remarks on Municipal Housebuilding are of very great interest. He points out that this is a field in which municipalities can neither work so effectively nor economically as private individuals. Not only are they compelled to write down the value of their land, thus throwing an increased burden on the rates, but even then they are unable to offer house accommodation to the class they wish to accommodate at rents within their means, and they have at the same time paralysed private enterprise and the work of such useful bodies as the Peabody Fund, both by their competition and by the restrictive by-laws they delight in. Whatever may be said, however, on this point, we think there cannot be two opinions on the anomaly which Mr. Gibbs most humorously points out of the controlling body, whose proper functions are to control and inspect, entering into competition with those subject to their powers. The paper requires to be read to be properly appreciated, and we think it cannot fail to direct public attention to a subject which has been allowed to remain too long in the background.

Registration of Title.

THE Report of the Delegates from the Borough of South Kensington who attended the Conference convened by the Corporation of the City of London to consider the working of the Land Transfer Act (1897), which has just been circulated, read in conjunction with the answer given by the Attorney-General in Parliament to a question put on the 10th ult. by the Member for Holborn, deserves some attention. The Conference seem practically unanimously to have passed a resolution to the effect that some independent inquiry was imperatively called for as to the working of the Act before the system was more generally adopted, as the working of the Act where it has been experimentally put in force has proved highly unsatisfactory, and has added seriously to the difficulty, expense, risk, and delay in transferring such property. The answer of the Attorney-General to the question as to whether such an inquiry would be granted by the Government hardly appears to us satisfactory, considering the importance of the subject. In saying the Government does not consider the proper time has arrived for any such inquiry, the Attorney-General does not deny that grounds for complaint exist, although he finds time to take such technical points as that the system of compulsory registration has not been in full force in London longer than since July last, and that the conference was not convened by the Corporation but by the Law and City Courts Committee. Two things seem abundantly clear, first that the conference, however summoned, was an extremely influential and representative one; and, secondly, that if the abuses it protests against have shown themselves where the Act has been adopted partially, and in small areas, they are hardly likely to diminish merely by an extended or continued application of the Act. The Attorney-General himself points out that first registrations must involve expense and trouble, whereas some time must elapse before the benefits can be realised, and this seems to us only a most powerful argument for taking every precaution that the present holders of real property should have no increased burden unnecessarily laid upon them. It also would appear that the very benefit of only adopting this measure experimentally in small areas will be lost if any revision in the early stages is to be refused. The Government are introducing facilities for registering absolute titles, and possibly are giving the whole matter more attention than the answer of the Attorney-General would lead the public to expect.

London Sewage Treatment.

THE fourth report on the bacterial treatment of sewage has recently been submitted to the London County Council by Dr. Clowes. We have long contended that the direct filtration of crude sewage is impracticable, and the reports on the London experiments bear out our contention. The experiments are now concluded, and the report before us is the final record and summary. It bears emphatic testimony to the value of bacterial treatment, when this is carried out in two stages—namely, tank treatment followed by what is usually termed filtration. As a result of the experiments, Dr. Clowes has arrived at six conclusions, which may be thus briefly summarised:—(1) Tank-treatment removes much of the solid matter from sewage, and this solid matter or sludge is reduced in amount by bacterial action "to a very considerable extent"; (2) coke-beds after long use have a sewage capacity of about 30 per cent. of the whole space which has been filled with coke; (3) the coke-bed fed with settled sewage, does not choke, and its purifying power improves for some time; (4) coke of suitable quality does not disintegrate during use; (5) the effluent from coke-beds fed with settled sewage "satisfactorily supports the respiration of fish," and "can never become offensive;" (6) the use of chemicals is quite unnecessary. Of course these conclusions are based on experiments with London sewage, but the Report contains information from various towns where bacterial treatment has been tried, and Dr. Clowes states that, after careful consideration of this information, he is convinced that the process has been uniformly successful when the necessary plant has been "reasonably and properly" constructed and worked. As the result of his investigations, Dr. Clowes recommends that the bacterial treatment of London sewage be commenced *without delay*.

The Passenger Traffic on the Thames.

THE County Council has lodged a Bill by which it seeks to obtain powers to acquire the piers and landing-stages on the Thames from the Thames Conservancy, and to purchase the undertaking of the Greenwich Pier Co., and to maintain a service of steamers on the river, the estimated expenditure being 328,000*l*. Last year the river was closed to the public, the Thames Steamboat Co. alleging that the County Council, by their attitude, had made it impossible for the company to continue its service, and we then had occasion to deplore the loss of this valuable "highway" through the busiest portion of a city which was at that very time suffering from the congestion of traffic in its principal thoroughfares. Without entering in any way into the controversy between the Council and the company, or inquiring whether those charges made by the company were substantiated, it appears to us as matters now stand that the steamboat service on the Thames is one of the very few undertakings which it is to the public advantage a municipal body should conduct. There is only one river, and therefore in organising and conducting a steamboat service they are not competing with private enterprise in the same manner that they do in their tramway undertakings. Moreover, the tolls exacted by the Thames Conservancy have hitherto stood in the way of the traffic being successfully conducted by private enterprise, and it is only a public body such as the County Council which can obtain the necessary powers to do away with this monopoly. Last year, however, we believe it was asserted that the Council would require three years before a steamboat service could be established, and if this is the case, it is much to be regretted the Council could not see its way to assisting the private company to maintain some service during this period. Not only is the inconvenience to the public to be considered, but if the river is closed for traffic during so long a period, the traffic becomes diverted, and the institution of the service becomes more difficult and hazardous in itself, and is apt to cause more injury to private undertakings which have been called into existence to carry passengers by other means who have been prevented from using the river. We trust the Council will now obtain the necessary powers, and institute its steamboat service with as little delay as possible.

Electric Fatalities.

THE evidence given at the inquest on the two unfortunate men who were killed by electric shock at the Fulham Baths emphasises the dangers arising from electric supply in places where it is possible for people to make good electrical connexion with earth through water or damp floors. We have on several occasions pointed out the danger arising from this cause in damp cellars, where it is possible to touch a metal-cased meter which may accidentally have come in contact with one of the electric wires. The danger would not be so great if several of the London supply companies regulated the pressures of their mains to earth better. The Board of Trade insist that the pressure of supply for lighting purposes must not be greater than 250 volts. This, however, is very little use so long as it is possible to get shocks of 300 or even 400 volts between an electric fitting and a water pipe, for example. In our opinion the Board of Trade ought not to have allowed certain companies to supply at the higher pressures without insisting on a very radical alteration of their mains and a proper regulation of their potentials to earth. Going on adding to their already overburdened networks, and letting the insulation resistance take care of itself, can only lead to disaster. Under these circumstances it is not easy to design a system of electric wiring that will be absolutely safe in places with damp floors. Perhaps the best system would be to enclose the whole of the electric wiring in a continuous metal covering which could be efficiently connected to earth. We should have, however, to make very sure about the earth connexion, and so make it absolutely impossible for these connexions ever to get accidentally broken. It would still be quite possible to get shocks with badly insulating switches, and when replacing glow lamps; but these, although unpleasant, need not be dangerous if the lamps and switches are placed in suitable positions.

Changes in Kensington.

THE Office of Woods and Forests are preparing a scheme for letting by tender some plots of ground at the southern, or Palace Green, end of Kensington Palace Gardens, for the erection of private residences similar to those already built there. The thoroughfare was laid out on the site of the Queen's private road for the Commissioners by Sir James Pennethorne, in 1844-5. The gates at the north end, near the old Gravel Pits, were designed by Wyatt & Brandon. Nearly all of the houses along either side of the road were planned and designed by eminent architects, including No. 3, by Owen Jones (1845); No. 13, for many years the residence of the Earl and Countess of Harrington, by C. J. Richardson, in the Domestic Gothic mode, in 1852; Nos. 10 and 11, by the elder Smirke, in 1852-4; and Nos. 18 and 19, forming one block, with square towers, after the Italian style, by Sir Charles Barry; another house was designed for Mr. Blashfield by J. Finden and J. Hayter Lewis (1845): No. 12A was built by the late Sir Morton Peto. Facing the Green, formerly the Moor, where stood Vanbrugh's water-tower and, until 1871, Henry VIII.'s conduit-house, is the house which Thackeray built, and mainly after his own plans, in 1861-2; the Crown lease (forty-one years unexpired) and the freehold garden in the rear were sold for 15,500*l.* at auction in November of last year. Four or five weeks ago a freehold estate of 93,300 ft. superficial on the east side of Church-street, and with grounds abutting on Kensington Palace-gardens, was placed in the market; on that site, having an aggregate frontage of 290 ft. stand York House, once occupied by the Princess Sophia, daughter of George III.; and Maitland House, the last home in England of Sir David Wilkie, and also the home of James Mill, the historian of India. The houses on the north side of High-street, between the ends of the Palace-gardens and Church-street, have recently been pulled down for a widening of the main thoroughfare, so that, as the south side has been gradually rebuilt during the past few years, we have now lost what formed an effective and pleasing old-world approach into the town from the west. On the other hand, the once rural district around Earl's Court has been covered with houses within our time. The estate, of which Lord Kensington is the ground landlord, was sold to a syndicate some days ago at auction by Messrs. Trollope for 565,000*l.* The property, extending over 82 acres, comprises about 1,450 houses, blocks of flats and shops, yielding a total of annual ground-rents of 18,280*l.* (ranging from 10*l.* to 1,600*l.* apiece), and, in the future, rack-rents computed at about 178,000*l.* per annum. It is anticipated that at no distant date, when the current leases have expired, other portions of the Kensington estate — including Edwardes-square with its unrivalled garden, and the terraces opposite the grounds of Holland House—will be cleared for rebuilding purposes. The story goes that Edwardes-square was built by M. Changier at the time of the threatened invasion from France, as a kind of Palais Royal for his compatriots the officers of Napoleon's army. We understand that the purchaser of the property at and around Earl's Court is Lord Iveagh, who thus becomes one of the principal ground landlords of London.

The Parish and Church of St. Peter, Regent-square, N.W.

AN Order in Council has ratified a scheme or representation made by the Ecclesiastical Commissioners for extending the boundaries on the south-west side of the parish of St. Peter, St. Pancras. In 1851, a certain portion of the original St. Pancras parish was separately assigned as a district chapelry to the consecrated church then known as Regent-square chapel. Under the provisions of the St. Pancras Ecclesiastical Regulation Act of 1868, and of a previous Act (19-20 Vic., c. 104), the chapel was named the Church of St. Peter, Regent-square; by a later enactment the district chapelry has since become the parish of St. Peter, Regent-square. The church was erected in pursuance of a local Act, 1 and 2 Geo. IV., c. 21, in 1825-6 for 1900 sittings at a cost of about 20,000*l.*, after plans and designs by W. & H. W. Inwood. The body of the fabric is constructed of white brick; it has a lofty hexastyle Ionic portico and angle-pediment of stone, and a stone circular tower in two stages with engaged Ionic and Composite columns, respectively. The site of the church had been a large pond which was purchased, with some adjoining land, with moneys raised upon the parochial rates. The hall, mission-house, and clubrooms on the north side are by Sir Arthur Blomfield; the schools (1863) were designed by R. Lewis Roumieu. The area to be added to the parish of St. Peter forms an isolated portion of the parish of St. George, Bloomsbury, and is situated between Regent-square and the middle line of Hunter-street.

All Saints' Church, Eagle.

THE Vicar of Eagle, in the parts of Kesteven, Lincolnshire, asks for contributions towards the reparation of the parish church, which is falling into a ruined condition. A report upon the state of the fabric has been prepared by Mr. J. T. Lee, architect, who estimates that a sum of at least 1,800*l.* will be needed to rebuild the church, and at the same time to preserve all that remains of its ancient and interesting features. The church is remarkable as being one of the oldest of existing churches which formerly belonged to the Knights of St. John of Jerusalem. At Eagle Hall, an extra-parochial liberty adjoining the parish, is the site of a commandery of that Order, which afterwards served as their infirmary; its revenues were valued at 144*l.* 18s. 10d. per annum at the Dissolution. The manor gave the title of Bailiff of Eagle to the dignitary third in rank of the Order of St. John of Jerusalem, and that title is still retained in the lately revived Order, whose headquarters are at St. John's Gate, Clerkenwell. King Stephen granted the church and manor of Eagle to the Knights Templars, from whom, at their suppression in 1309, it passed to the Knights Hospitaller of St. John; the latter held both until their possessions were confiscated in 1540. In the course of some trial excavations made about twelve months ago were found caps and bases of the original stone piers of the church, buried several feet below the present surface. The church, a small structure of brick and stone, consists of a chancel, nave, north aisle, and tower, for the most part of the early fourteenth-century period, and contains portion of a Norman font.

Loan Exhibition, Dublin.

THE Royal Hibernian Academy has for the first time started a winter Loan Exhibition of pictures by old masters. We are not able to give any account of it at first hand; but judging from the catalogue which has been forwarded to us the collection must be of considerable interest, including as it does works by Reynolds, Romney, Hoppner, Lawrence, Gainsborough, Hogarth, &c.; besides pictures of the French school by Watteau, Lancret, Chardin, Largillière, and others. We gather that all the pictures are collected in Ireland, which, as observed in the prefatory note to the catalogue, is a sufficient answer to the statement that "there are no pictures in Ireland." It is to be hoped that this spirited attempt will meet with the success and appreciation which it deserves.

PROPOSED VILLAGE HOMES, FULWOOD, YORKSHIRE.—At a recent meeting of the Ecclesall Board of Guardians Mr. A. F. Watson, of Holmes & Watson, architects, Sheffield, attended and submitted plans for the proposed village homes at Bole Hill, Fulwood. Mr. Watson explained that alterations made since the plans were originally drawn had resulted in a considerable reduction in the cost, and now he estimated that the scheme could be carried out for 13,000*l.* The Board adopted the plans, which will be sent to the Local Government Board for approval.

LETTER FROM PARIS.

THE Congress for Promoting Sunday Rest for all employed in the building industries, lately held at Paris, has passed resolutions to the following effect :—That Sunday rest is a natural right and a duty; that all working men deprived of the regular Sunday rest must suffer moral and physical prejudice; that work on Sunday causes a prejudice not only to the workers, but to the employers, by reason of the depreciation of the value and quality of the work done by men who have not enjoyed a sufficient weekly rest, to architects and engineers by reason of the responsibilities incurred through such poor or bad work; that all those who are engaged in building enterprise or are employers of labour should take the steps necessary to assure a weekly day of rest to all those employed in such building work; that house owners should stipulate in their contracts with builders that no work should be done on Sundays, and that fines should be imposed for each breach of this obligation; that architects, engineers, and others should do their best to help this new movement, and that the State and Municipalities should do likewise; and that the workmen themselves should understand that their own interest lies in obtaining the universal agreement to one full day of rest from work each week.

An agreement has been come to between the State and the City of Paris concerning the creation of an Ecole des Arts et Métiers at Paris. Four of these schools of arts and trades exist at present in France—at Angers, Aix, Chalons-sur-Marne, and Lille. The fifth will now be established at Paris. The new buildings will be erected in the Boulevard de l'Hôpital, on the ground left vacant by the demolishing of the slaughter house of Villejuif. The buildings are to cost 48,000*l.*, and another 80,000*l.* will be expended on the interior arrangements, the workshops, tools, and machines. The workshops will contain a very extensive and complete plant of tool machines and tools necessary for the production of every kind of industrial object, from instruments for doctors and surgeons to be utilised in the Parisian hospitals, to bicycles and motor-cars. It is expected that the new school will be opened in 1905.

Owing to the great danger from fire which the surrounding industrial workshops offer to the Carnavalet Museum and the Bibliothèque de la Ville de Paris, it has been decided to expropriate and demolish the surrounding houses, and entirely isolate the Museum buildings, and form a new street in prolongation of the Rue Etienne Marcel.

In accordance with the wish of the "Vieux Paris" Committee the Municipal Council has decided on an annual exhibition of photographs of Paris. The first, which will take place in October, will have as its subject the banks of the Seine where it traverses Paris, the flower markets, and the houses of the seventeenth century. The photographs are to be subjected to a process to fix them unalterably, and to be preserved in the Carnavalet Museum, where they will form a valuable record for future historians.

Paris will soon possess a new museum near the Carnavalet, the Musée Victor Hugo, which is to be opened shortly in one of the fine old Louis XIII. houses, with brick fronts, in the Place des Vosges, where Hugo lived for some time in the years of his early fame. On February 26 this house will be opened. The whole has been arranged by M. Paul Meurice, the old and attached friend of Victor Hugo, who has devoted his fortune and the last years of his life to the task. The museum will be under the care of the Municipal Service des Beaux-Arts, and will contain furniture executed under the direction of Victor Hugo and decorated by him; numerous engravings and books; original drawings of extraordinary intensity of conception, where the genius of the poet shows itself in humorous scenes and in strange architectural fancies; innumerable pieces of bric-à-brac, along with some valuable pictures. Among these last is one of the first representation of "Hernani," by Besnard; "The crowd passing Victor Hugo's house," by Rafaelli, and pictures of the ceremony at the Panthéon, by Roybet and other artists.

The Grand Palais on the Champs is giving the Government a great deal of trouble. The building is only three years old, and already requires a great deal of repair, in consequence mainly of the hurried manner in which it was erected to be in time for the 1900 exhibition. The Petit Palais is also requiring repairs, and the lighting has to be improved in the basement, which it is intended should be let for temporary exhibitions. It is in this basement that a group of artists propose to arrange an exhibition of works exhibited in former salons, and illustrating the history of Paris. This exhibition will be divided into three periods: the first, extending from 1673 to 1789, will include works shown at the exhibitions of the Académie Royale; the second, 1791 to 1880, will correspond with the Salons carried out under State management; the third will comprehend the Salons organised by the Société des Artistes Français.

The Commission for the Metropolitan railways at Paris is considering a scheme for the formation of underground electric railways from Boulogne to Paris and from Neuilly to Paris, and an interior circular metropolitan railway within the present fortifications.

The Prefet of the Seine has been requested by the Institut to form a committee to be composed of the various Ministers, members of the Institut, and the Municipal Council, and the Prefet, to study and decide the various questions relating to the interests of the Institut with regard to the passage of the proposed metropolitan railway beneath its Institut buildings, and the expropriation of a portion of the Palais Mazarin.

The Paris Municipal Council has accepted the offers made by the Société des Engrais for the treatment and disposal of the domestic refuse coming from the sixth, seventh, fourteenth, and fifteenth arrondissements of Paris.

An important exhibition of arts, building industries, and public works is being organised, to be held at Paris in 1903, by M. Adrien Duvand, Vice-President of the "Ligue d'Enseignement." One of the chief objects of this exhibition will be that of obtaining valuable solutions of the problem of constructing cheap dwellings, and will concern the financial, technical, practical, sanitary, and artistic questions relating to the habitation.

A series of lectures is being organised by the Syndicat Ouvrier de la Sculpture and the Société Populaire des Beaux-Arts, to be held in the Bourse de Travail. The first series of lectures will be given by M. Edmond Pottier, Curator of the Louvre Museum, on Popular Art in Egypt, to be followed by M. de Baudot, Diocesan Architect, and M. Salomon Reinach, Curator of the Museum of St. Germain, on Gothic Architecture and the Flemish and French Primitives.

It appears that the Government, after some hesitation, has decided on opening an establishment in rivalry with the private shops, for the sale of the products of the Sèvres factory, of medals, and of engravings of the Louvre collection. The house is situated in the Boulevard des Italiens, at the angle of the Rue Favart, and will be arranged and decorated by M. Sandier. Whether the enterprise will be a success remains to be seen; its establishment has given great umbrage to the Parisian tradesmen.

The Société des Amis des Monuments Parisiens made a visit on the 22nd ult. to the church of the Panthéon, under the guidance of M. Nénot, architect of the New Sorbonne, to study the monument and compare its various portions with the original drawings by Soufflot & Rondelet, which form part of the interesting collection belonging to M. Charles Normand, the President of the Société des Monuments et des Arts. During the visit, M. Camille Flammarion, the astronomer, explained the working of the pendulum which has been installed in the Panthéon for the purpose of demonstrating the motion of the earth.

The jury in the competition for the decoration of the Mairie of Vanves have selected three painters, MM. Darien, Enders, and Pierre Vauthier to take part in the final competition to be sent in at the end of May. More than sixty artists competed. The subjects were limited to landscapes around the neighbourhood of Vanves. Having regard to the high quality of the works submitted, silver medals were awarded to three other competitors—MM. d'Argence, Pape, and Marret.

The new Mairie of the XVIIIth Arrondissement is at last to be completed, and the Municipal Council has voted a sum of 382,000 fr. towards the work. The inhabitants of Montmartre have long had to be content with a shabby and inconvenient public building, the last work of the architect Varcollier. When the building is completed, it is expected that the task of decorating it will be assigned to M. Willette, who received the first prize in the recent competition in Signs, and who, besides his popular reputation as a caricaturist, is also a designer and colourist of no mean order.

The success of M. Detaille's large decorative paintings, before referred to, for the Hôtel de Ville, has led to his being offered a commission by the Government for a decorative work for the Panthéon, to be placed between the piers of the choir. M. Detaille has made sketches of four compositions, from among which the Department of Fine Arts is to make its selection. One represents the Revolution of 1830, with the attack on the Caserne de Babylone; the second, the volunteers of 1792; the third, the funeral obsequies of General Damrémont; the fourth and most remarkable, the "Chant du Départ," a kind of apotheosis of the First Republic marching against the enemy, headed by an allegorical figure of "La Patrie," crowned, mounted on a horse and brandishing the tricolour standard.

M. Jean P. Laurens has just completed a triptych for the decoration of the new Hôtel de Ville of Tours (illustrated in our last issue). In this work, which will probably be seen at the next Salon, the painter has represented in the first panel Charles VII. saluting Joan of Arc who is departing at the head of her troops. In the second, the heroine is standing at the funeral pile; and the third represents, at night, the deserted square and the dying fires around the stake.

M. Rodin is executing the monument which is to be erected in Paris to the memory of Puvis de Chavannes. It is very simple in conception, and shows a bust of the artist on a stele, beside which is a figure representing "Le Génie du Repos dans l'éternelle Gloire." The Luxembourg already possesses an admirable bust of Puvis de Chavannes by the same sculptor.

The annual general meeting of the Societé des Architectes Diplomés was held on the 15th ult. at the Ecole des Beaux-Arts. The laureate of the year, and winner of the medal awarded by the Société, was declared to be Mr. Arthur Brown, an American student, pupil of M. Laloux. This medal is awarded to the student who has obtained during the school year the largest number of awards in the various school competitions. M. Laloux was elected President of the Société for the coming year, M. Léon Davoust, Secretary, and M. Maurice Poupinel, Treasurer.

During the coming year M. Marqueste will succeed M. Jean Paul Laurens as President of the Académie des Beaux-Arts, with M. Pascal, the architect, as Vice-President. One of the first occupations of the Académie this year will be to decide the competition for the Achille Leclerc prize, of which the subject is the entrance gateway of a large library, opening on a Cour d'Honneur. The drawings are to be deposited at the Institut on the 8th inst., and the decision given on the 10th. In the Godebœuf competition, for which 229 designs have been submitted, the jury of the Ecole des Beaux-Arts have awarded the prize to M. Midy, pupil of MM. Guadet and Paulin. The subject was "The stone termination to a small turret staircase in a private mansion;" a rather small subject to arouse so large a competition.

The Société des Ingénieurs Civils de France has elected as its President M. Bodin; Vice-Presidents, MM. Coisseau, Couriot, Hillairet, and Moreau; treasurer, M. de Chasseloup-Laubat; and secretaries, MM. Laurain and Baudet. The new President, M. Bodin, professor at the École Centrale, is the author of the magnificent Viaduct of Viaur, on the line from Carmaux to Rodez, which was inaugurated a few weeks ago. The Union Centrale des Architectes Français has elected as President M. Saint-Anne Lorizier, with M. Farochon and M. Boesch (of Reims) as Vice-Presidents.

The price of gas to private consumers at Paris is reduced from January 1 from 30 centimes to 20 centimes the cubic mètre—from 6s. 9d. to 4s. 6d. per 1,000 feet. The difference of 10 centimes per cubic mètre will be paid to the Gas Company by the Paris Municipality until 1906, when the monopoly ceases and a new company will take over the Paris gas supply.

THE LONDON MANUAL.—The London Manual for 1903 (London: Edward Lloyd, Ltd., Salisbury-square) is the seventh year of publication of a very useful little work. It contains a great deal of well-arranged information concerning public bodies, and as a work of reference to the municipal government of London it can be relied on.

MAGAZINES AND REVIEWS.

IN the *Art Journal* Mr. W. A. S. Benson writes an article on "Back-window Prospects in London," giving illustrations of some bare prospects of the kind, backyards, and so on, and their beautified aspect; we do not quite gather whether they are actual transformations or only possible ones, but in any case the lesson is a very good and much-needed one. So much may be done with a back-court if people would only make the attempt. John Constable and his works is the subject of an article signed jointly by Mr. G. D. Leslie and Mr. F. A. Eaton. Mr. Claude Phillips commences a series of articles on the interesting subject of "Great Portrait-Sculpture through the Ages," commencing with the statue of Rameses II. Mr. Laking continues his articles on the armour and arms in the Wallace Collection, with some splendid illustrations.

The *Magazine of Art* commences with an article on that very poetic painter Mr. Wetherbee, whose pictures at last year's Academy reached the highest point he has attained, and give us leave to expect still finer developments from him. Under the heading "Modern Furniture," Mr. Konody discusses, with the help of illustrations, some furniture designed by Mr. Frank Brangwyn. Furniture designed by a good painter is generally interesting; in these examples there is rather too much of the severe vertical line, as in the buffet on page 109 and the inlaid settle at the end of the article. Too much naïveté, as a reaction against too much display, is apt to be the weak point of artists' furniture at present. The chairs in two of the illustrations, with their decorative panels contrasting with the upright rails, are however admirable. An article on "Our Best Municipal Buildings" written and illustrated by Mr. Raffles Davison, seems intended as the first of a set under the general title, "The Recent Advance in Architecture." There is such a tendency at present among writers on art to disparage modern architecture, that it is rather refreshing to come across an article of the opposite tendency; and the collected illustrations, numerous though on a small scale, certainly go to show that there is a considerable improvement in the minor Town Halls of the day as compared with the solemn be-columned commonplaces of a generation ago. Not that we expect or wish for the picturesque in a Town Hall (unless for a very small country place); and what Mr. Davison says is true enough, that the love (among Corporations) for heavy cornices and columns may really be taken to proceed from a kind of conviction that this sort of treatment is proper to a Town Hall, and is its correct architectural expression. "Is not this," he asks, "just one of those points in which architects and the public may very well see eye to eye? After all there is such a thing as a Town Hall looking like a Town Hall, and the public are surely right in demanding it." As we observed last week in respect of the Tours Hôtel de Ville, this idea of a proper type for a Municipal building is practically accepted and acted upon in France, where all Hôtels de Ville have a kind of family likeness in regard to general style and grouping. A short article in the same number draws attention to Mr. Ælfred Fahey's employment of gold and silver point as a medium for architectural drawing—rather a new idea in this country. The reproduction of his drawing of the Victoria Tower shows a beautiful and delicate piece of work, quite true in balance and perspective and in the indication of architectural detail, in spite of the difficulty attendant on drawing elaborate architectural subjects in a medium which does not admit of correction.

The *Berliner Architekturwelt* is occupied almost entirely with illustrations of interiors and details in the new style, a good many belonging to a house "Unter den Linden" by Herr A. Grenander of Berlin, showing a great deal of cleverness and originality of a kind, but it is in a bad style; the whole number is redolent of "l'art nouveau." The same thing pursues us in the first article in the *Architektonische Rundschau*, on "Neue Formen" in German ornament; nightmare things for the most part. Among the larger illustrations in the *Rundschau* Herr Hartig's "Ruhmeshalle" at Barmen is a heavy Classic composition of some dignity, spoiled by that ugliest of possible forms of cupola, a comical roof on a square plan; the two interior views are more pleasing than the exterior, as is often the case with German buildings of this class. Professor Stiller's Bank at Duisburg, shown in an effective pen drawing, is a building founded on Renaissance forms but with a rather novel treatment, and notable for the solidity of expression given by small and deep-set windows and massive piers.

The *Antiquary* devotes an article to the stones locally known as "The Devil's Arrows," near Boroughbridge (Yorkshire), with some illustrations. There are now only three, though there are records of four, five, and a somewhat doubtful one (seventeenth century) of seven. Two are 22 ft. 6 in. in height and the third 18 ft. They used to be spoken of as Roman, but we quite agree with Mr. Leadman, who writes the article, that, whatever they are, they date from far before the Roman occupation. They belong, we would say, to the same family, so to speak, as the more celebrated monoliths of Stonehenge, and are relics of an ancient religious aspiration. Mr. A. C. Fryer contributes an article on "The Burgley Font," or otherwise "the stone vessel now used as the baptismal font in the parish church of Burgley, Yorkshire, a relic of considerable antiquity, dating from Anglo-Saxon times." Several photographs are given of the object, a kind of square stone trough, with a runic inscription, now so much worn as to be susceptible of two or three interpretations. The interesting point is whether this object was really constructed for a baptismal font or, as used to be supposed, as the base of a cross. The structural reasons given against the latter interpretation appear to us to be sound. The assigned date is about the middle of the eighth century.

In the *London Quarterly* Mr. Frank Henley writes a good and sensible article on "British Industry and the Labour Problem." It is to be hoped that some of the better read and wiser among the building artisans will give it their attention and will profit by it. In the course of the article Mr. Henley puts in a brief and trenchant manner the Trade Union argument and its fallacy:—

> "A house is being built; there are 30,000 bricks to lay; if three men lay 1,000 bricks a day each the work will last them ten days. But if, while receiving the same wages per day per man, those men can get the employer to accept 500 bricks as one man's work for a day, then the job will last the three men twenty days, or afford employment for six men for ten days. That is obvious, and workmen see it easily when the Union leader puts it to them. What they do not see so easily is that, by doubling the cost of laying 30,000 bricks, they have very likely prevented some one else from giving orders for 100,000 bricks to be laid, orders that would have been given had the cost of labour not increased; the eventual result being a reduction in the amount of work to be done and the wages to be earned."

This argument has, we know, been often put before the working classes, or written where they could read it if they chose; but perhaps not always so clearly and simply as in the above words. The conclusion of the writer is that employers must do one of two things; either crush the trade-unions, which he thinks not practicable except at an enormous cost; or they must show the men in a practical way that their real interests lie in co-operation with and not in antagonism to capital. "Trade-unionism—the instrument devised by the working classes—stands condemned for its failure to understand and forward the true interests of labour; it is for the employers to give the workers a substitute, a system which shall succeed where trade-unionism has failed;" that is, the system of co-operation. The worst of this remedy—and this drawback to it is again the fault of the working men—is that the co-operative artisans, though they like it very much when profits are going up, always want to back out of it when profits are going down.

In the *Fortnightly Review* "A British Workman" gives a spirited reply to Mr. Schooling's "Letter to the Working Classes" in a previous number, and makes some points. In answer to the charge that the modern workman shows a want of interest in his work, he says "this is largely accounted for by the fact that specialisation has reduced him from a skilled artisan to that of a mere human machine. How can you expect a machine to act as a man?" The charge seems to be admitted, as this is put forward as an excuse; an excuse furnished to the working man by William Morris and his party. As we were observing only a week or two back (see our leading article of December 20), the fact of this specialisation is to be lamented, but the escape from it, all circumstances considered, is a more difficult problem than some philanthropists (or philartisanists) quite realise. But this argument has been put into the hand of the working man by those who specially pose as his friends, and one is not surprised that he should seize upon it. In regard to the charge that so much less work is got through now than formerly, the writer does what is often done by other apologists—evades the question of the building trades, in regard to which this charge is chiefly made, and depends on showing that other industries, which have not been specially accused, are not guilty. That will hardly help the argument as far as the notorious increase in cost and decrease in output of work in the building industries are concerned.

In the *National Review* Sir Henry le Marchant, who is one of the Directors of the London and India Docks Company, writes a long article on "The Port of London," which is really a defence of that institution against its detractors. He makes a very good case in regard to the commercial importance of the Port, and its facilities for shipping in comparison with a good many other ports, and shows satisfactorily that there has been a good deal of misrepresentation on these points. For instance, in regard to the largest vessel afloat, the *Celtic*, he shows that she would have difficulty in berthing in a dock at any other port. "She could berth at Southampton, but would be on the mud at low water. She could possibly get up to Antwerp, but could not be received into any of the docks there. She could not get up to Hamburg, Rotterdam, Amsterdam, or Bremen at all. She could not get into Glasgow or Hull except at high spring tides. She could not get into Bristol at all, the widest lock being 70 ft." (the *Celtic* is 75 ft. beam). "At Liverpool, her usual port, she can only get into dock when the spring tides are favourable. . . . . In London she could get into the Tilbury Dock at a time considerably before high water, and remain afloat and not rest on the mud. She would be able to get into the Albert Dock extension which the London and India Docks Company have got Parliamentary powers to make." All this certainly goes to show that London is not "an out-of-date port." But what we want to know, and what Sir Henry does not touch upon, is—first, whether the facilities for landing and moving goods are such as they ought to be in what claims to be the principal port of the Kingdom; and secondly, what is the state of the river which gives access to the London docks, and whether or not it is showing signs of silting up. The latter is an engineering question, and the article deals only with the commercial question. In the same magazine "Antique Furniture in the Sale-room," by Mr. W. Roberts, is a historical article of considerable interest, dealing only with facts and statistics. We learn from it, among other things, that Sheraton furniture is a long way behind Chippendale in auction-room prices; an instance of the influence of fashion, for it is as well made as Chippendale, and generally better designed. The author intimates that there has been much successful imitation of the work of both makers, but does not give any instances of the imitations being sold as genuine and at genuine prices. That is the test of such "success," after all.

To the *Monthly Review* Sir Edward Fry contributes the second part of an essay on "The Age of the Inhabited World," an argument based on the consideration of the time required to bring about biological changes. Perhaps it can hardly be called an argument, but it is a suggestion in favour of a shorter period than that usually accepted or imagined (for the whole scientific faith on this subject is in a very vague state), on the ground that biological changes may have proceeded more rapidly when the earth was young and the heat of the sun greater, and therefore that we should be as far wrong in arguing from the present slow rate of change as a man would be in supposing that the rate of change in his body was no faster when he was a child than when he was sixty. The analogy seems rather a doubtful one. There is at present a kind of reaction against the belief in the immense periods of time required by geologists and biologists for the development of the world up to its present stage; but it seems to be rather a swing of the pendulum than a conclusion based on scientific reasons, and our conviction is that the longer periods are likely to be the nearer to the truth. Mr.

Arthur Morrison concludes (at least we presume it is the concluding article) his essay on "The Painters of Japan." There is much information to be got from this essay in regard to Japanese painters, though the idea that they and their works are worth discussion in as serious a tone as might be used in regard to the great painters of the Renaissance, appears to us to be merely the extravagance of an enthusiast.

The *Cornhill Magazine* is giving a series of articles on the prospects of the present day in different professions, and deals this month with the engineering profession. The article gives a good synopsis of the objects to be kept in view in training for the profession, while conveying the impression that it is by no means easy to get at the exact course of instruction best calculated to prepare a youth to be a successful engineer. The Scottish engineering schools are said to be the only establishments of university rank where a practical and scientific training can be found in combination. The writer seems to think that after a general liberal education (on the necessity of which he is wisely emphatic), the student should first master applied mechanics, "and realise by practice how that powerful aid to the sense reaches every department of civil engineering."

"If a youth has a special aptitude and liking for mechanical work, it is probable that he cannot begin too young to form a practical acquaintance with machinery and with the methods of its construction. But in engaging as a pupil or an apprentice in the workshops, he should understand that his object should be rather to learn the processes carried out there, and the organisation and management of the labour employed, than to become himself expert as an artisan in any particular department. Consequently, in selecting the works he is to enter, regard will be paid less to their size and the magnitude of the work carried on in them, than to the opportunities which appear likely to be afforded him of participating in, and of thus obtaining an insight into, a variety of operations. The same general principle may be said to hold good in regard to the practical part of the training, no matter what particular branch of the profession is adopted. But it may be reiterated that many engineers of experience hold strongly the view that the practical training in every department of engineering should embrace some period of workshop experience. If this was true formerly—and the record of many distinguished engineers bears witness in its favour—how much more pressing is the need of such knowledge and experience at the present day, when machinery occupies so conspicuous a place in every engineering operation?"

In *Scribner* Mr. Russell Sturgis, under "The Field of Art," gives a critical review of an exhibition of American wood engravings at the New York Public Library, which includes some very good remarks on the æsthetics of wood engraving, an art in the present day perhaps nowhere so well represented as in America, in spite of the immense use made of "processes" in American illustrated publications. Mr. Timothy Cole's engravings after Old Masters, to which we have often referred, represent almost the perfection of style in genuine wood engraving, and appear to have been largely illustrated at the exhibition in question. An article on "The Old Route to Orleans—the Mississippi," in the same issue, is most picturesquely written and beautifully illustrated.

In *Harper* Mr. Arthur Lawrence gives an account of "London's Oldest Art Club," the Langham: we confess that we were not aware that it had so long a history. The head illustration, "The Langham of Fifty Years Ago: in Clipstone-street," is an amusing record of the aspect of Bohemianism in that day, and reminds one of Clive's descriptions of the painters in "The Newcomes." Things have much changed, and even Bohemianism has put on a finish of its own.

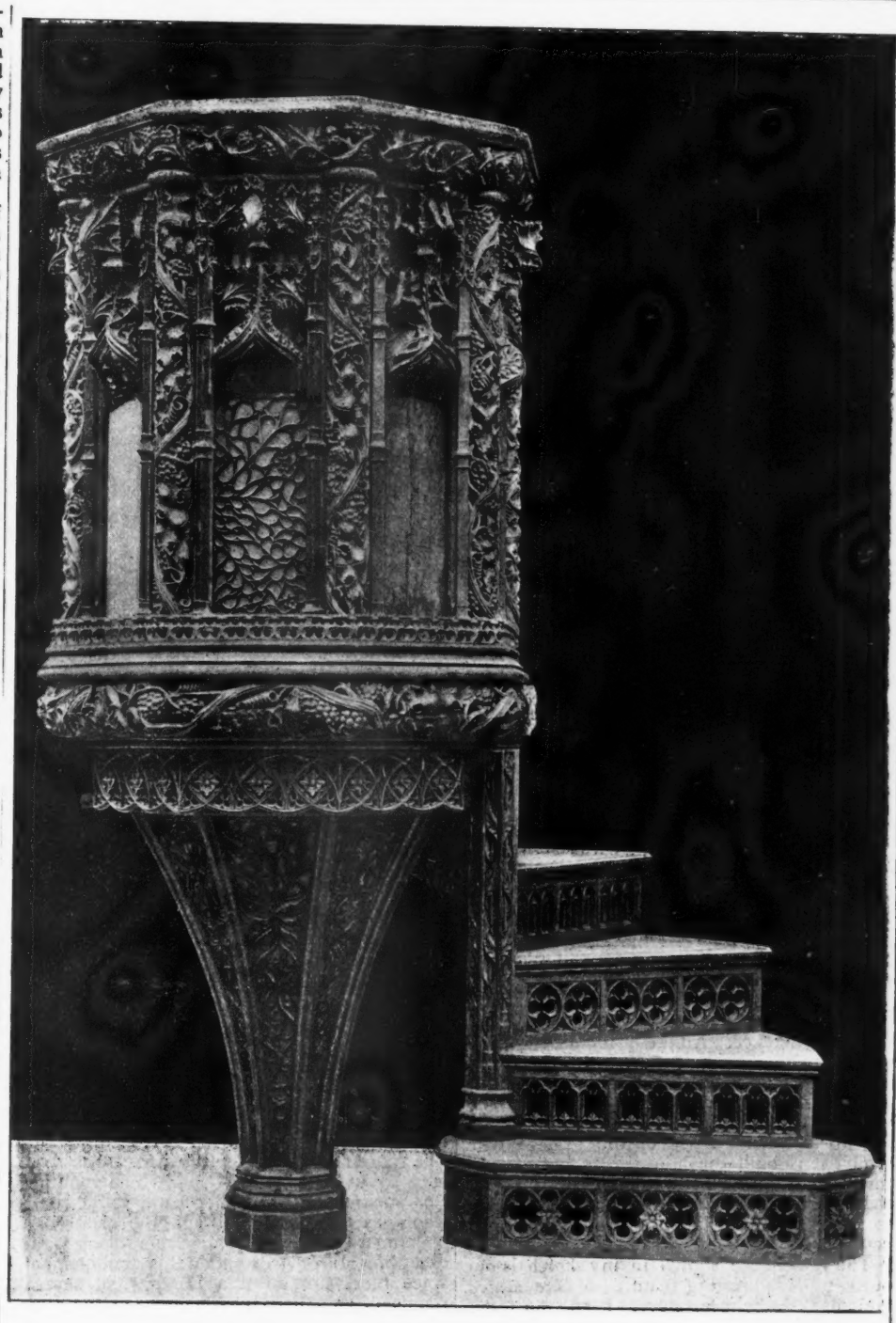
The *Revue Générale* contains an eloquent article by M. Arnold Goffin on the work of Constantin Mennier, the bronze sculptor of subjects of labour. He makes a good remark on the difference, from the artist's point of view, between the labouring man away from his work and the labouring man engaged on his work:—

"Séparé de son outil, l'artisan prend de la gaucherie; il est embarrassé de ses grosses mains vides et ballantes, et de son inaction. Replacez-le dans son atelier, devant son établi, au centre de sa forge, parmi les terres qu'il laboure ou ensemence; rendez-lui l'engin de son travail, il ressaisira en même temps l'aisance de ses gestes et la beauté plastique de ses attitudes. Car ses mouvements incessamment répétés ont fini par atteindre une précision parfaite, par s'adapter, avec une exactitude rigoureuse, à l'effet à produire, et se sont ainsi équilibrés, inconsciemment, selon un rythme. . . . Les gestes des acteurs de la *Moisson* ou de la *Mine* ont presque la solennelle simplicité, la noblesse religieuse des rites consacrés. Et, en vérité, ils n'ont pas que la semblance de rites: ce sont les rites qui conjurent les puissances organiques de la terre, qui les soumettent aux forces élémentaires manifestées dans la volonté victorieuse à force de ténacité, de ces ouvriers."

This is finely said, and true; and its truth is illustrated also in such works as Millet's paintings.

Knowledge contains an interesting and learned article by Miss Agnes M. Clerke on "The Sun's Dusky Veil," the screen of attenuated matter overspreading the photosphere. For the reasons for believing in the existence of this "dusky veil," and the main conclusions at present prevailing on the question of the sun's surface, we must refer the reader to Miss Clerke's closely reasoned article, a kind of summary of present knowledge on a very puzzling subject, which should be of interest to every dweller on a planet which lives only by the sun's influence.

In the *Gentleman's Magazine* will be found a most practically useful article by Mr. F. Graham Ansell, F.C.S., on "How to Test Drinking Water," a subject which is treated at considerable length and with the authority of an expert.



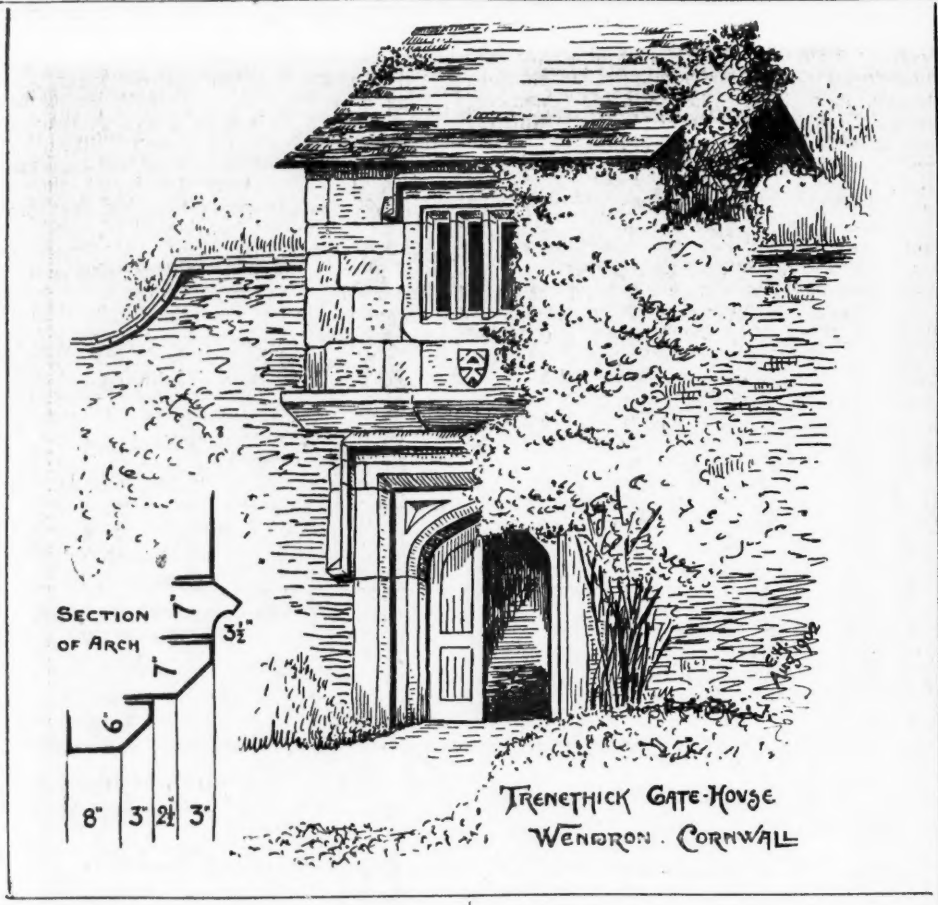
Kenton Church Pulpit: as Restored.

KENTON CHURCH PULPIT, SOUTH DEVON.

THIS pulpit, which dates from early in the sixteenth century, contains work of an exceptionally fine character; much of the detail is of uncommon type, exhibiting evidence of Flemish or Hispano-Flemish influence.

The pulpit was taken to pieces by the order of an incumbent of some thirty years ago, on account, it is said, of its inconvenient smallness, and its place supplied by a modern structure. Unfortunately, very little care was taken of the fragments of the old work, some of which remained in the church chest, but the greater part was distributed amongst the parishioners and others. After some trouble, much of this has been collected; but the work of restoration was no easy matter, as the mutilation and loss of parts was so great. However, the difficulties were happily overcome, and the work successfully completed in June, 1895. The architect was Mr. F. Bligh Bond, of Bristol, and the carver of the restored work Mr. Herbert Read, of Exeter.

LANCHESTER COTTAGE HOMES.—The Lanchester Board of Guardians have now begun to carry out their scheme for the erection of cottage homes. The work in connexion with the new buildings will be executed from the plans of Messrs. Newcombe & Newcombe, Newcastle, who were placed first in the open competition by the assessor, Mr. J. H. Morton of South Shields.



TRENETHICK GATEHOUSE, WENDRON, CORNWALL.

A LITTLE to the north of Helston, in the parish of Wendron, lies the Barton farm of Trenethick, one of the most ancient houses in Cornwall. The arrangement of the plan suggests that it was built at a time when a dwelling-house of that size needed some means of defence. All the principal windows and doors open on to a courtyard in front and a smaller one inside, and that in front is surrounded by walls of about 12 ft. in height, with a gatehouse at the main entrance. Owing to the hardness of the granite with which it is built the house does not possess much in the way of architectural detail, but there is enough to enable the date of erection to be fixed at the latter end of the fifteenth century.

The gatehouse shown in my sketch is one of the most interesting features of Trenethick, and has, I believe, never been illustrated before. The room over the entrance is about 9 ft. by 7 ft., and 7 ft. high to the ceiling, and is reached by a flight of stone steps inside the courtyard. The soffit of the entrance is formed by large granite lintels laid side by side with a span of 8 ft. 6 in. The arch is 6 ft. wide and 8 ft. to the apex. There is no arch on the inner side, but only a square chamfered opening. The roofing material is of stone, which, with the granite walling, has weathered to a beautiful colour.

The coat of arms visible under the window (or, a fess between two chevrons sable) is that used by the Hill family, who built the house, and became extinct in 1763.

R. H. ERNEST HILL.

THE HIGH SCHOOL FOR GIRLS AT WIESBADEN.

THE subject of education is so much under discussion at the present time that we are glad to be able to give some particulars and an illustration of the new high school for girls at Wiesbaden, which was opened on April 16, 1901. This school is admitted to be the most complete in Germany, and therefore it may fairly be assumed to be probably the best equipped and best arranged girls' school in the world.

It occupies the site of an older school, and therefore Herr Conradi, of Lübeck, the architect, was necessarily to some degree confined in his designs by the size of the site. The main front of the building faces the Schloss Platz, with a northern aspect. The principal design, as will be seen from the illustration of the exterior, is two wings radiating from a semi-circular centre; the material used is a light red sandstone which we fear will not be very durable, but is extremely effective at the present moment. The architect evidently endeavoured to unite practical educational requirements with decorative designs. The representation of the old town of Wiesbaden, however, which occupies a portion of the face of the central part of the building, is scarcely visible from a distance, but, on closer view, it is an attractive detail. The interior of the building is admirable in its simplicity of treatment. The central staircase faces the main entrance, and is repeated between each of the succeeding floors. The space at the head of the staircase is occupied by a single pillar, from which vaulting-ribs spring, and on either hand vaulted corridors extend right and left, the classrooms opening from them. The ground-floor is an exception, to some extent, to this arrangement, since there are on it a library and several rooms of an official character. On the same floor is also a large gymnasium. The left, or north, corridor extends to some extent backwards—that is, to the south—and at the end of this are lavatories on each floor. The entire building contains forty-four rooms, and at present is occupied by 800 students. In addition to the classrooms, there is also a fine music-saloon, fitted with an organ and gallery, and raised platform, and capable of holding 550 persons.

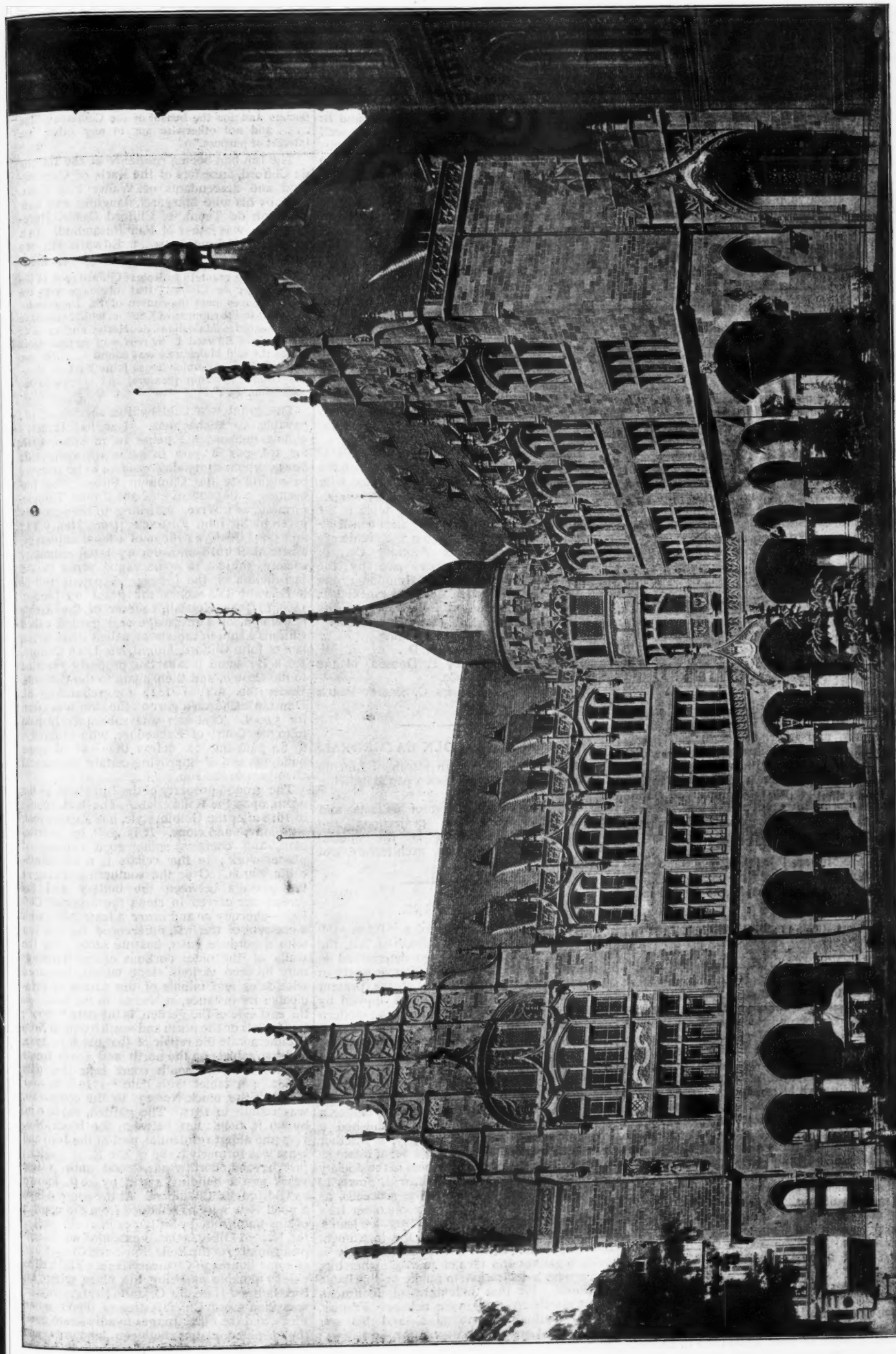
These particulars quite fail, however, to give any impression of the admirable manner in which every detail necessary for an educational establishment of this kind has been carried out, and illustrated or symbolised in the decoration. Thus the ornamentation of the ground floor, both in carving and flat decoration, is illustrative of the more common plants, or any one may fairly call them weeds, though the bold thistle is as effective in decoration as a more prized flower. The first-floor decoration consists chiefly of flowers, and the third of fruit. This succession being intended to typify the gradual results of education. The carvings, which are coloured throughout the floors, are suggestive, though it must be confessed that they are sometimes so fanciful that they need a little explanation. Thus the squirrel clinging to the branch of oak is intended to represent quickness, and the owl wisdom, while the lark typifies the aspiration after knowledge and educational ideas. These and many other designs are well executed, and, though, as we have said, a trifle fanciful, it is really agreeable and surprising to find the union of imagination with a thoroughly practical building. How practical it is may be instanced by a small fact. In each room there is a thermometer fastened to the wall; an aperture behind this extends to the surface of the passage, and is closed by a magnifying glass; thus the attendant traversing the passage has only to look at the glass in the corridor, and he is able to see whether the room is at the normal standard of temperature. This instance in regard to detail might be multiplied over and over again, since there is hardly a matter of the most infinitesimal kind connected with the wants of the pupils which has not been carefully attended to. It is, in fact, only possible by a complete survey of the entire building to appreciate the educational advantages within reach of the pupils of the Wiesbaden High School; a school which was erected by the city, and where pupils can be educated for little more than 100 marks, or 5*l.* a year, and the governing idea of which is well represented by the motto engraved on the face of the building, "Soll die Stadt blühen muss sie die Jugend nehen," which may be translated: "If the town is to flourish it must educate its young." The cost of the building and the fittings amounted to something like 50 000*l.*, and the aim of the city of Wiesbaden to make this school a centre for the whole of the district, which may be called the Duchy of Nassau, including such important towns as Frankfort and Mainz, has for the present been attained. But in Germany education is so highly valued, that this very successful effort of Wiesbaden to create a building which should be at once beautiful and useful, will unquestionably cause similar structures to be raised in other towns.

THE LAW SOCIETY'S INSTITUTE, AND THE SIX CLERKS IN CHANCERY.

THE houses at the corner of Chancery-lane and Carey-street have been pulled down for an enlargement of the Institute after Mr. H. P. Adams's plans and designs. The "Society of Gentlemen Practisers in the Courts of Law and Equity," founded, it seems, in or about 1720, established themselves in Chancery-lane in 1823. Nine years afterwards they were settled in the older portion, completed in 1832, of their present quarters, designed by Lewis Vulliamy, the second premium in the competition being awarded to Sir Charles Barry. That portion comprised the Classic portico, entrance halls in Chancery-lane and Bell-yard, library, &c. North and south wings were added on the sites of many houses in Bell-yard, Pope's Head-court, and the lane, by Vulliamy and his successor (in 1853), P. Hardwick. In 1868-70 Hardwick made a further addition, including the examination hall, on the north side. The site is not without interest, for it is that of the town inn of the Prior of Nocton, a house of canons in Lincolnshire, since called Herfleete's Inn, after its owner, and the home of the Six Clerks in Chancery. Two deeds, cited by W. Blott in his remarkable book "Blemundsbury," seem to show that the Six Clerks were tenants there, in 1538, under the Prior of the Hospital of St. John of Jerusalem. In an original "plott for all Thickeits ffeildt" (New Square and around) drawn by J. Long in 1592 is plotted "The Syx Clerks Office" on the west side of Chancery-lane and abutting on the east side of "The waye now from Thyckets feeld" (Bell-yard) where was a gate known as the Field Gate, which is cited in conveyances of Lincoln's Inn made in 1535 and 1580. The position marked on Long's plan is confirmed by Ogilby and Morgan's map of 1677, and supports the account given by Sir George Buc in his "Third Universitie of England," a treatise printed at the end of Edmund Howes's "Annales" which form a continuation of Stow's Survey, printed in black letter, 1631, folio. Buc, *obiit* 1623, writes:—

"These [six] clerks live and lodge and common together in one house in Chancery-lane purchased and accommodated for them by Master John Kedermister, Esquire, one of this Society. . . . . Their house was in ancient times the Inn of the Abbot of Nocton, in Lincolnshire, and was since the house of one Herfleete, and of him it was called Herfleete's Inn."

The inn was rebuilt after its destruction by fire in 1621. The Six Clerks remained there until they migrated in 1778 to No. 10, being the middle portion of the block in Stone Buildings at the northern end of Chancery-lane, that had been purposely erected for them in terms of two Acts (14 and 15 Geo. III., cc. 43 and 56) after Sir Robert Taylor's designs in 1775-7. Their



High School for Girls, Wiesbaden.—Herr Conradi, architect.

office was taken over by the Records and Writs Clerks in 1842, and twenty years ago No. 10 was converted by the Benchers of Lincoln's Inn as a school-of-arms for the Inns of Court Volunteers, when Nos. 8, 9, and 11, were raised by one floor and refitted as chambers, Mr. Stephen Salter being the architect for the alterations.

Illustrations.

THE BISHOP'S THRONE, TRURO CATHEDRAL.

THIS effective piece of modern Gothic, the illustration of which is reproduced from a photograph, was designed by the late Mr. J. L. Pearson, R.A., the architect of the cathedral, and executed from his drawings by Messrs. Luscombe, of Exeter.

FRONT: 60, PRINCES-STREET, EDINBURGH.

THIS is a street front in Edinburgh designed by Mr. Hippolyte J. Blanc. The new building takes the place of a structure of three stories, which was one of the earliest of the narrow frontages given off, when Princes-street was constructed, about 140 years ago.

In the new structure advantage has been taken of the modern spirit to rear additional floors, in order to take the fullest advantage of the available space. The different floors will be appropriated for business enterprises of different kinds, two of them being specially constructed to meet the requirements of a photographic establishment. Behind the front shops there are very extensive saloons.

The whole building is of white freestone from Northumberland.

THE CHURCH OF ST. AGATHA, SPARKBROOK, BIRMINGHAM.

THIS church was the first erected by the Trustees of the Birmingham Churches Fund, from the proceeds of the sale of the sites on which Christ Church and St. Peter's Church formerly stood.

The building, which is designed to seat 1,000, is faced externally with South Staffordshire bricks, and internally with buff bricks with Hollington stone arches and dressings. The roofs are covered with Whiteland Abbey slate. The tower is 120 ft. high to the coping of the parapet (not 240 ft. as indicated on the illustration by an incorrect scale), and 160 ft. to the vane, and is to be furnished eventually with a peal of bells.

The architect is Mr. W. H. Bidlake, and the builders are Messrs. John Bowen & Sons, both of Birmingham. The total cost of the building, including heating apparatus, gas fittings, and organ fronts, was 17,000*l.*

THE CENTRAL ELECTRIC SUPPLY COMPANY'S STATION, GROVE-ROAD.

THE illustration of the new chimney shaft and part of the principal elevation of the new generating station for the Central Electric Supply Co., Ltd., now in course of erection on a site at Grove-road, Marylebone, is from a water-colour drawing by Mr. Charles Stanley Peach, architect, which was hung at the last Exhibition of the Royal Academy.

The building is a large electric power station intended to supply current in bulk to the St. James' and Pall Mall Electric Light Co. and the Westminster Electric Supply Corporation. It will consist of three principal blocks, connected together, each block being 228 ft. square and 78 ft. high to tops of gables. There are two subsidiary blocks, also connected to the main building, the larger being 545 ft. long and an average width of 180 ft., and the smaller being 300 ft. long and 55 ft. wide. One chimney shaft, 36 ft. square at the bottom and 24 ft. square at the top and 250 ft. high, has already been built. The foundations for the second have also been put in. There will eventually be six shafts, two to each of the principal blocks. The building, exclusive of chimney stacks, will have when completed a cubical content of over 17,000,000 ft. and will cover about 7½ acres. It will provide accommodation for machinery capable of developing over 100,000 horse-power.

The gables of the engine-room shown in the illustration repeat along the Lodge-road frontage. The repetition of them, as well as the materials of which they are constructed—namely, stock brick and York stone, with blue brick piers—will, it is hoped, give in appearance the strength and severity suitable to a large engineering undertaking. The stacks, which from their size look more like towers than chimney shafts, especially as visible smoke is rarely, if ever, emitted from them, are constructed of the same materials and in harmony with the main building. It is well known that, sooner or later, all chimney shafts split near the top, and it is necessary to reinforce them with iron bands. In the present case, the horizontal courses are used as tie bands to strengthen the shaft, while the corner buttresses act as vertical stiffeners between the horizontal bands, thus encasing the whole of the upper part of the stack in a permanent and durable manner, instead of in the unsightly iron band construction which so frequently has to be used. The cornice also provides a permanent platform round the outside of the stack near the top, in the position required for access to the exterior faces to facilitate repairs or repointing. It is broken back in the centre on all four sides, to allow free passage for the ropes used by steeplejacks when this kind of work is in progress. Thus the actual necessities of construction have been taken advantage of to obtain what, it is hoped, is an architectural effect.

The general construction of the main buildings is fireproof throughout. The walls of the engine-rooms and boiler-houses are lined with white glazed bricks with blue brick dressings.

The contractor for the building work is Sir J. T. Firbank, of London. The steel construction has been carried out from the architect's drawings by the Phœnix Foundry Co., of Derby. The fireproof floors are by the Columbian Fireproofing Co. (London); the roof glazing by Messrs. Mellowes (Sheffield); the metal windows and iron doors by the Crittall Manufacturing Co. (Braintree, Essex).

The carving is by Mr. H. C. Fehr.

The joint engineers are Dr. A. B. W. Kennedy and Mr. Sidney T. Dobson, of the Central Electric Supply Co.

The architects are Messrs. C. Stanley Peach & C. H. Reilly, London.

SOUTH PORCH, LINCOLN CATHEDRAL.

THE view of the South Porch of Lincoln Cathedral is reproduced from a pencil drawing by Mr. H. W. Cotman.

It shows well that union of delicate and refined detail with bold projections and massive character, which is the special "note" of the exterior architecture of Lincoln.

CLIFFORD'S INN.

THE members, consisting of a "Principal" and fourteen or fifteen "Rules," of this, the oldest Inn of Chancery, have determined to dissolve their Society, to sell their property in the Inn, and to place funds at the present Attorney-General's disposal, to be applied by him as he may deem best to meet the modern necessities of legal education. The Court of Chancery have sanctioned arrangements for the transfer. The action of the members of the Inn follows upon a judgment given on June 19, 1900, by Mr. Justice Cozens-Hardy in the action Smith *v.* Kerr, which had been brought, practically, to determine whether a certain conveyance of 1618 established a charitable trust over the property, or whether it is held by the trustees of the legal estate as private property for the members of the Society for their own personal benefit, with power to realise the estate and divide the proceeds, as has been done in the cases of some other Inns of Chancery and of the adjoining Serjeants' Inn. The Court adjudged that the instrument of 1618, under which alone the property is held, negatives the idea of private ownership, and proves a dedication to public or charitable purposes. By that indenture of feoffment, dated March 29, 1618, made between Francis, fourth Earl of Cumberland, and his son and heir, Lord Clifford, of the first part; Nicholas Sulyard, Principal of the Inn and Bencher of Lincoln's Inn, and the twelve Rules, of the second part; and Richard Prescott and Richard Antrobus, of the third part, the then thirteen members of the house covenanted to pay a capital sum of 600*l.* and a yearly rent of 4*l.* to the Cliffords. Thus the members became in effect co-founders with the Lords Clifford in trust of a charitable foundation which should, as all parties thereby agreed,

"for ever hereaf reteyne and keep the same usual and antient name of Cliffords Inne and shall for ever hereaf be contynued and employed as an Inn of Chancery for the good of the gentlemen of that Societe and for the benefit of the Commonwelthe . . . . and not otherwise nor to any other use interest or purpose."

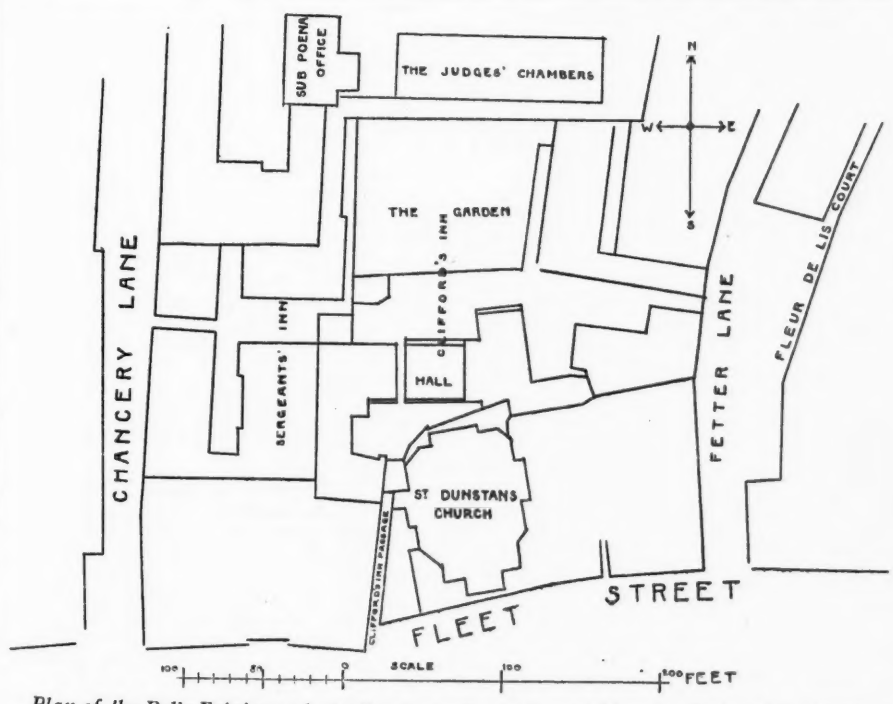
The Inn had been a residence of the Barons de Clifford, ancestors of the Earls of Cumberland and descendants of Walter Fitz Ponz, who, by his wife Margaret, daughter and heir of Ralph de Toeni, of Clifford Castle, Herefordshire, was father of Fair Rosamond. In a grant of February 24, 3 Edward II., we read:—

"The King granteth to Robert Clifford [son of the great Roger de Clifford] that messuage with the appurtenances next the church of St. Dunstan-in-the-West in the suburbs of London, which messuage was sometimes Malculines de Herley and came to the hands of Edward I. by reason of certain debts which the said Malculines was bound . . . . to our said father . . . . which house John Earl of Richmond did hold at our pleasure, and is now in our possession. . . ."

The grant was held by the service of 1d., payable at Michaelmas. Isabella, Robert's widow, demised the house in 18 Edward III. for 10*l.* per annum to some *apprenticiis de banco*, whom Dugdale considers to be lawyers belonging to the Common Pleas. The Inn became a dependency of the Inner Temple, forming, as it were, according to the accounts given by Sir John Fortescue (*temp.* Henry VI.) and Lord Coke, a college of a legal university, albeit until 1618 an unincorporated voluntary society, subject in some vague sense to the jurisdiction of the Judges. A patent roll of 8 Edward IV. recites the grant on June 9, 1468, to John Kendall, cofferer of the King's household, of a messuage and garden called Clifford's Inn, in the street called Fleet-street, late of John Clifford, knight, late Lord Clifford, &c. By some means the property reverted to the Crown, and then again to the Cliffords. Under the Act of 1829 for rebuilding St. Dunstan's Church a part of the Inn was taken for 5,000*l.* That sum was subsequently paid in to the Court of Exchequer, who ordered it to be paid out to defray the cost of some buildings and of improving certain houses and chambers in the Inn.

The ground property of the Inn abuts, on the north, upon the Rolls estate. The hall, rebuilt in 1618 after the Gothic style, has a gable roof, with louvre and clock. It is 40 ft. by 35 ft. on plan, and contains some good ornamental plaster-work; in the cellars is a thirteenth-century arch. Over the southern opening of the passage between the buttery and the screens are carved in stone the arms of Clifford—checquy *or* and *azure*, a fesse *gules*, with a crescent of the first, differenced for the Inn with a bordure *gules*, besanté *sable*. On the walls of the older portions of the buildings may be seen various stone tablets, inscribed with dates and initials of the names of principals: for instance, at No. 14, in the block on the east side of the garden, is the date "1669"; two tablets on the north and south fronts of No. 9 commemorate the repair of that block in 1782, and two tablets on the north and south fronts of No. 1 in the south court bear the date "1682"; a tablet with date "1719" is over No. 10; the block No. 13, to the south-east, was rebuilt in 1831. The garden, 109 ft. 6 in. by 99 ft. 6 in., lies between the block Nos. 14-7 (the oldest residential part of the Inn) and what was formerly a slip of the Rolls garden; just beyond, northwards, stood until a few years ago a building, 130 ft. by 40 ft., known as Old Judges' Chambers. At the present time a good view may be obtained from the garden of the main front (by Sir James Pennethorne) of the Record Office, as lately extended westwards over the sites of the Rolls House and Chapel, and of some houses in Chancery-lane. The hall is chiefly notable as being the place where sat Sir Matthew Hale, Sir Orlando Bridgman, who was then Lord Chief Justice of the Common Pleas, and the other Judges to adjudicate upon the disputed claims between landlords and tenants after the Great Fire; and there has been preserved an illuminated MS. on vellum of the ordinances of the Society of *temp.* Henry VIII. Jay records that he often met Sir Walter Scott, Southey, Coleridge, Lamb,

Commemorative Cross, Hurst Green



Plan of the Rolls Estates and of other properties in the neighbourhood, signed "James Pennethorne," and dated January 25, 1847.

and Talfourd in the chambers of George Dyer, who wrote a history of Cambridge and edited nearly all the volumes of the Delphin Classics for Valpy. The Inn was also the home of Robert Poltock, who wrote "Peter Wilkins," the one successful imitation of Defoe's story. Sir Edward Coke in 1571 and Selden in 1602 were admitted of Clifford's Inn, and the regicide Harrison served as clerk to one Thomas Houlker, whom Clarendon calls Hoselker, an attorney there. Until recent years the garden was exposed to the inroads of a mob who ran riot over the ground to share a dole in kind which used to be distributed there at the beating of the St. Dunstan parish bounds. A correspondent of the *Times* avers that there early one morning in August, 1897, he heard the song of a nightingale.

COMMEMORATIVE CROSS, HURST GREEN.

THIS cross has been erected at Hurst Green, near Stonyhurst (Lancashire), in memory of the services of the British Army in South Africa. It bears on a bronze plate the inscription: "This cross commemorates the services of Frederick Sleigh, first Earl Roberts, R.C. V.C., and his companions in arms, the soldiers and sailors of the Empire, who fought in South Africa, 1899-1902."

The monument is a replica of the ancient one in Iston churchyard, Cumberland, and has been erected from the drawings and under the superintendence of Mr. H. S. Fairhurst, architect, of Blackburn. The details were drawn out from rubbings from the ancient monument just referred to.

The material is selected Darley-Dale stone, and the work was done by Messrs. Earp, Hobbs, & Miller, of Manchester. The total height, with the base, is 13 ft.

REGISTERED TRADES-UNIONS.

THERE has just been published, as an appendix to the annual Report of the Chief Registrar of Friendly Societies, a list of trades-unions registered under the Acts of 1871 and 1876. The return is made up to December 31, 1901, and the delay in publication is probably due to the fact that the secretaries of unions are allowed five months after the end of the year in which to send in the required particulars of their respective organisations. Subjoined are the titles of the registered trades-unions directly or indirectly connected with the building trades, so far as England is concerned. In this list the date of registration is first indicated, then follows the name of the union, next the number of

members, and finally the state of the funds on December 31.

Cheshire. — 1891, Birkenhead Operative House Painters' Society, 334, 945*l.* 1894, Birkenhead Bricklayers' Labourers' Society, 120, 224*l*

Derbyshire.—1889, Derby and District Builders' Labourers' Protective, Accident, and Burial Society, 28, 21*l.* 1897, Long Eaton Builders' Labourers' Protective, Accident, and Burial Society, 13, 10*l.* 1892, Ilkeston and District Builders' Labourers' Trade Society, 40, 2*l.* 1895, Derby and District Building Trades Federation, 411, 30*l.*

Durham—1892, Stockton and District Builders' Labourers' Union, 105, 229*l.* 1895, Hartlepools and District Builders' Labourers' Union, 224, 269*l.* 1898, Darlington Builders' Labourers' Union, 116, 96*l.*

Lancashire.—1860, Amalgamated Society of Carpenters and Joiners, Manchester, 67,018, 188,020*l.* 1866, Amalgamated Society of Mill Sawyers, Woodcutting Machinists, and Wood Turners of Great Britain and Ireland, Manchester, 4,446, 8,074*l.* 1865, United Operative Plumbers' Association of Great Britain and Ireland, Manchester, 11,089, 29,310*l.* 1833, Amalgamated Union of Cabinet Makers, Liverpool, 2,518, 8,795*l.* 1853, Amalgamated Society of French Polishers of Great Britain and Ireland, Manchester, 946, 714*l.* 1886, National Amalgamated Society of Operative House and Ship Painters and Decorators, Manchester, 10,833, 34,974*l.* 1856, Rochdale Operative House Painters' Association, 131, 688*l.* 1876, Manchester and Salford House Painters' Association, 80, 271*l.* 1890, United Operative Street Masons, Paviors, and Stone Dressers' Society of Great Britain and Ireland, Manchester, 930, 1,232*l.* 1889, National Association of Plasterers' Labourers, Bolton, 484, 281*l.* 1893, Liverpool Bricklayers' Labourers' Society, 56, 175*l.* 1894, Manchester and District Builders' Labourers' Society, 180, 45*l.* 1893, Blackpool Bricklayers' Labourers' Trade, Accident, and Burial Society, 28, 51*l.* 1894, National Society of Concrete and Asphalt Workers, Salford, 100, 120*l.* 1849, Manchester and Lancashire District Bricklayers' Labourers' Union, 114, 291*l.* 1897, Bolton Builders' Labourers' Trade Society, 30, 35*l* 1896, National Association of Tile, Mosaic, and Faïence Fixers, Manchester, 120, 344*l.* 1892, Liverpool District Bricklayers' Labourers' Union, 160, 104*l.* 1898, Liverpool French Polishers' Association, 18, 54*l.* 1894, Bootle and District Bricklayers' Labourers' Union, 40, 20*l.* 1901, Leigh and Bedford District Bricklayers' Labourers' Union, 47, 36*l.* 1872, Liverpool and Birkenhead Operative Ship and House Painters' Benefit Association, 356, 481*l.* 1784, Liverpool Operative House Painters' Old Society, 1,335, 1,299*l.* 1873, Liverpool United Mill Sawyers and Woodcutting Machinists' Society, 70, 229*l.*

Leicestershire.—1890, Leicester and District Builders' Labourers' Protection, Accident, and Burial Society, 900, 501*l.* 1891, Hinckley and District Builders' Labourers' Protective, Accident, and Burial Society, 53, 17*l.* (deficiency).

Lincolnshire.—1899, Grimsby Builders' Labourers' Protective, Sick, Accident, and Burial Society, 30, 20*l.*

London.—1848, Operative Bricklayers' Society, 38,743, 100,650*l.* 1873, Amalgamated Society of House Decorators and Painters, 5 380, 7,164*l.* 1860, National Association of Operative Plasterers, 10,074, 25,670*l.* 1872, Stone Carvers' Trade Association, 181, 970*l.* 1860, Perseverance Society of Carpenters and Joiners, 621, 1,210*l.* 1827, General Union of Operative Carpenters and Joiners, 7,301, 11,060*l.* 1853, London Operative Zinc Workers' Society, 104, 858*l.* 1865, Progressive Union of Cabinet Makers, 290, 932*l.* 1864, London Central Association of House Decorators and Painters, 185, 404*l.* 1882, Perseverance Cabinet Makers' Association, 147, 680*l.* 1809, Friendly Society of Ironfounders of England, Ireland, and Wales, 18,268, 104,715*l.* 1833, Friendly Society of Operative Stonemasons of England, Ireland, and Wales, 19,280, 26,713*l.* 1865, Grosvenor Society of House Painters and Decorators, 103, 243*l.* 1889, United Builders' Labourers' Union, 9,753, 8,017*l.* 1889, Glass Painters' Union, 59, 50*l.* 1890, Fret Lead Glaziers' and Cutters' Union, 116, 465*l.* 1890, Kent and Essex Brickmasters' and Flint Merchants' Protection Association, 21, 57*l.* 1889, Islington Society and North London Union of House Painters and Decorators, 30, 28*l.* 1890, West End House Painters' and Decorators' Trade Union, 64, 121*l.* 1889, Navvies', Builders' Labourers', and General Labourers' Union, 3,520, 582*l.* 1890, Corrugated Iron Roofers', Door Makers', Sash Makers', and General Iron Workers' Union, 46, 40*l.* 1892, London Amalgamated Plumbers' Mates' Society, 295, 40*l.* 1892, London Society of Wood-cutting Machinists and Mill Sawyers, 63, 384*l.* 1892, London Operative Lathrenders' Trade Union, 56, 242*l.* 1892, Amalgamated Operative Marble and Slate Masons' Trade and Benefit Society, 104, 515*l.* 1892, London Slaters' and Tilers' Union, 62, 272*l.* 1895, Independent Cabinet Makers' Association, 328, 173*l.* 1895, Footway Masons' and Carriageway Paviors' Trade Protection Society, 115, 146*l.* 1891, Cabinet Trades' Federation, 20, 159*l.* 1892, Amalgamated Society of Tesselated Tile, Faïence, and Mosaic Workers and Fixers, 144, 466*l.* 1898, National Society of Asphalt Workers, 46, 160*l.* 1898, United Turners', Machinists', and Athletic Wood Workers' Trade Union, 128, 160*l.* 1899, London French Polishers' Society, 97, 171*l.* 1899, United Society of Mechanical Wood Workers, 26, 0*l.* 1900, Italian Mosaic Workers' Society in London, 211, 138*l.*

Northamptonshire.—1859, Local Operative Carpenters' and Joiners' Friendly and Trade Society, Northampton, 20, 133*l.*

Northumberland.—1885, Amalgamated Slaters' and Tilers' Provident Society, Newcastle, 1260, 911*l.* 1893, United Operative Paviors of the City and County of Newcastle, 66, 304*l.* 1898, Newcastle and District Builders' Labourers' Union, 800, 313*l.*

Nottinghamshire.—1866, Operative Brickmakers' Society for Nottingham and District, 220, 1,297*l.* 1891, Nottingham Builders' Labourers' Trade Society, 1,198, 1,408*l.* 1895, Newark Builders' Labourers' Protective, Accident, and Burial Society, 113, 42*l.*

Oxfordshire.—1894, Oxford and District Builders' Labourers' Society, 250, 123*l.*

Somersetshire.—1892, West of England and South Wales Operative Lathrenders' Trade Society, Bristol, 95, 407*l.* 1873, Bristol, West of England, and South Wales Operatives' Trade and Provident Society, 30,320, 45,751*l.*

Staffordshire. — 1889, Tamworth Builders' Labourers' Trade Society, 68, 122*l.* 1897, Burton and District Builders' Labourers' Protective, Accident, and Burial Society, 95, 105*l.* 1891, West Bromwich and District Builders' Labourers' Protective, Accident, and Burial Society, 80, 169*l.* 1899, Walsall Builders' Labourers' Society, 85, 189*l.* 1890, Wolverhampton and District Builders' Labourers' Protective, Accident, and Burial Society, 117, 351*l.*

Warwickshire.—1889, Birmingham and District Builders' Labourers' Association, 1,400, 416*l.* 1896, Coventry and District Builders' Labourers' Protective, Accident, and Burial Society, 130, 264*l.*

Worcestershire. — 1892, Catshill Amalgamated Society of Builders and General Labourers, 68, 143*l.* 1889, Amalgamated Association of Builders' Labourers of Great Britain, 198, 437*l.* 1889, Kidderminster and District Builders' Labourers' Protective, Accident, and Burial Society, 50, 18*l.* 1891, Malvern Branch of Builders' Labourers' Protective, Accident, and Burial Society, 318, 35*l.*

Yorkshire.—1889, Leeds Order of the Amalgamated Builders' Labourers' Union of Great Britain and Ireland, 1,250, 741*l.* 1889, Hull Builders' Labourers' Trade Society, 700, 1,913*l.* 1889, Sheffield Lodge No. 1 of the Amalgamated Builders' Labourers' Union of Great Britain and Ireland, 157, 230*l.* 1893, Barnsley Builders' Labourers' Protective, Accident, and Burial Society, 69, 90*l.* 1894, Halifax Builders' Labourers' Protective, Accident, and Burial Society, 20, 128*l.* 1895, Huddersfield Builders' Labourers' Protective, Accident, and Burial Society, 170, 276*l.* 1896, Bradford and District Builders' Labourers' Protective, Accident, and Burial Union, 285, 461*l.* 1897, Brighouse Builders' Labourers' Trade Society, 16, 40*l.* 1897, Keighley and District Builders' Labourers' Protective, Accident, and Burial Union, 17, 42*l.* 1871, Middlesbrough Builders' Labourers' Union of Great Britain and Ireland, 134, 92*l.* 1896, Batley Order of the Amalgamated Builders' Labourers' Union of Great Britain and Ireland, 12, 3*l.* 1892, Scarborough Builders' and General Labourers' Union, 68, 157*l.* 1899, York and District Federated Builders' Labourers' Trade Society, 200, 65*l.* 1900, Dewsbury Federated Builders' Labourers' Protective, Accident, and Burial Society, 54, 12*l.*

Books.

The Modern Homestead: Its Arrangement and Construction. By RICHARD HENDERSON, Member of the Royal Agricultural Society of England, &c. London: The County Gentlemen's Association, Ltd. 1902.

THIS volume forms one of the Estate Library Series published by the County Gentlemen's Association, and is on the whole an excellent and useful work. The author writes from long experience, and has evidently an intimate knowledge of farm buildings of different kinds. From the technical terms he employs, we judge that he hails from over the border, and if this be the case, it accounts for the divergence from English type of some of the methods of construction which he recommends. It may also account for what we regard as the erroneous application of the terms "red pine" and "white pine" to the woods which are more commonly known as "red (or yellow) deal (or fir)" and "white deal." Red pine is a distinct American variety, and is sold in this country under that name, and white pine is the American term for the wood sold in this country as yellow pine. The paragraphs dealing with stresses in roofs require revision; in comparing rafters of different pitches, the author forgets that with the same span the high-pitched roof has to bear both a greater dead-load and a greater wind-pressure, and figs. 37 to 39 are therefore quite beside the mark. There are other details to which exception might be taken, but the author covers so much ground that the wonder is, not that there are mistakes in the book, but that they are so few and relatively so unimportant. Architects and landowners will find the book a mine of information on farm buildings of nearly every kind. Typical plans are given, and the author gives reasons for the positions assigned to the various parts. The details of design and construction are described and illustrated. Cows, horses, sheep, and pigs are all considered, and the "stercoraceous heap"—to quote Cowper's high-sounding term—is not forgotten. The author never fails to remember that economy is second only to utility, and he is therefore a reasonable guide. He is also somewhat verbose, but a good index makes amends. We have pleasure in recommending the book.

Natural and Artificial Sewage Treatment. By Lieut.-Colonel ALFRED S. JONES, V.C., A.M.Inst.C.E., &c., and H. ALFRED ROECHLING, M.Inst.C.E., &c. London: E. & F. N. Spon, Ltd. 1902.

THE authors claim that this work is not a mere repetition of old papers witten by them and read at various times before different societies, "but an entirely fresh publication, right up to date." The work is divided into two parts—the first (by Lieut.-Colonel Jones) containing only twenty-seven pages, and the second (by Mr. Roechling) sixty-nine pages. The information is almost entirely of a general character, and appears to be intended chiefly for District Councillors. Whether the information is of such a nature as to help them in coming to a wise decision as to the most suitable method of sewage-disposal is another matter. To us the authors seem to have a strong bias in favour of land-treatment, and to have allowed this bias to influence their work in a manner which robs it of a good deal of its value. When the case against bacterial treatment is supported by a charge, unsupported by any testimony, that "surveyors may have and certainly sometimes do have personal interests in pushing the sale of" new sanitary appliances, including (as we gather from the context) automatic appliances for the control of bacterial tanks and beds, we may assume that the case is a weak one. No one denies that a sewage farm, properly managed on suitable soil, furnishes a satisfactory method of sewage disposal, particularly for small towns. But it is equally true that many sewage farms have proved rank failures. Very little is said about these, but the objections to the bacterial process of purification by artificial means are very much in evidence, and are not always fairly stated. Much is made of the choking of contact beds, but the authors do not make it clear that this is usually due to the beds being fed with crude sewage. A coke bed at the Northern Outfall has been dealing with London sewage for over eight years, and is "still giving admirable results," and Dr. Clowes's final conclusion is "that the sewage capacity of the coke bed, *when the bed is fed with settled sewage*, fluctuates slightly, but undergoes no permanent reduction; *the bed does not choke.*"*

The Production and Use of Acetylene Gas. By W. DOMAN. Westminster: P. S. King & Son. 1902.

THIS book extends to sixty pages only, but contains practically all the information concerning acetylene and calcium carbide likely to be sought for by the average consumer of acetylene. It is divided into eight short chapters, which describe the properties of calcium carbide and acetylene and the most suitable appliances for the generation and consumption of the gas for illuminating purposes.

The chapter on "The Fitting Up and Care of an Acetylene Installation" is for the most part excellent, but we differ from the author when he recommends the use of ¼-in. brass piping for conveying acetylene to the gas brackets. The distributing-pipes should, in our opinion, always be of iron. The author also says that the lime sludge from the generators "may be run directly into the drains, if they are flushed immediately afterwards, so as to clear the lime out of the syphons and small

* The italics are ours.

pipes." We believe that the officers of the London County Council very properly prohibit the direct discharge of lime sludge from acetylene generators into the drains under their control.

The book is well illustrated and admirably printed, but the absence of an index is a great defect. The author writes in a clear and simple style, and is accurate in his statements and impartial in his views. We have no hesitation in recommending the book even in its present condition to all who desire to acquire a good general knowledge of the properties of acetylene and the manner in which the gas may be generated and consumed, but when a call is made for a second edition we hope an index will be added.

A Handbook of the Open-air Treatment and Life in an Open-air Sanatorium. By DR. CHARLES REINHARDT and DR. DAVID THOMSON. Second edition, enlarged. London: John Bale, Sons, & Danielsson, Ltd. 1902.

BY those who believe that the value of a book is measured by the number of copies printed or sold, Dr. Reinhardt's work will be accorded a high place. The first edition was published as recently as September, 1900, and the new edition, published exactly two years later, brings the total number of copies up to 9,000. The book is essentially "popular" in character, and is issued at the popular price of one shilling. It is illustrated with a large number of reproductions from photographs of British sanatoria for consumptives, and contains a list of nearly all the sanatoria now in use, together with a short description of each. Interesting information of an elementary character, respecting the cause and cure of the disease, is given, and the consumptive patient will find much of it both cheering and useful. Architects, however, have little to learn from the book. No plans are given, and very few hints on construction. We do not mention these omissions by way of adverse criticism: Dr. Reinhardt set out to write a popular non-technical treatise, and he has succeeded in his task.

Journal of the Sanitary Institute. Vol. XXIII., Part III.

THIS issue of the Journal is almost entirely devoted to addresses delivered in connexion with the Congress at Manchester in September last. It contains comparatively little of direct service to the architect and engineer. One of the longest papers is by Mr. W. N. Shaw, M.A., Sc.D., and is entitled "The Treatment of Smoke: A Sanitary Parallel." Mr. Shaw seeks to establish a parallel between smoke and sewage, but does not pursue the parallel to the logical conclusion that smoke, like sewage, should be removed by the Local Authority. This would be too great a task even for the London County Council. Like so many other writers on the subject, he considers the domestic fireplace the greatest sinner, but the suggestions he offers do not appear to be very practicable. If he could compel the Government to recognise the parallel between smoke and sewage, a Royal Commission on Smoke might be appointed as soon as that on sewage has finished its labours. Perhaps the most interesting paper is that by Sir William J. Collins on "Man *versus* the Microbe." The author maintains that the condition of the man is of more importance than the microbe. The latter is always with us, but whether it will have injurious effects depends upon the health or otherwise of the body to which it gains access. But Sir William goes further than this: "Bacteriology," he says, "has doubtless done much for pathology, but it has done much less than scientific persons both in and out of the profession are apt to imagine. It has not yet helped us to understand the nature of any one of the ordinary acute specific diseases of man, in the sense that it has unquestionably identified a specific microbe as the cause of any one of them." This is a matter which the doctors must fight out among themselves, but the sooner they settle the point the better.

Christmas: Its Origin and Associations. By W. F. DAWSON. London: Elliot Stock. 1902. 8vo.

WITHOUT other apparent object than that of producing some 300 pages of print, Mr. W. F. Dawson has diluted what might have been a useful work on the history and observance of the Christmas festival till it has expanded into an exasperating and inconsequent medley. The book lacks that unity of purpose which alone can produce the order and coherence of a treatise. The author has interlarded matter proper to his subject with a number of historical incidents threaded upon the slender string of mere coincidence of date. It is of no interest in connexion with Christmas that Lord Cobham was executed on December 25, 1418, or that Anne of Cleves landed in England on December 27, 1539. A catalogue of events that have occurred, for instance, in or about April 1 might or might not be an interesting compilation; it could hardly be a coherent one.

The illustrations (*e.g.*, pp. 14, 32, 202, 111) are very much of the parish magazine order, and often have but the slightest connexion with the text. There is a good index.

Book-keeping for Builders, specially adapted for Small Businesses. By ARTHUR E. DAVIS. London; 1902.

IT has been recently remarked that the average British manufacturer is too much inclined to believe in a vague power which he calls "luck," and that he conducts his business simply by rule of thumb. He sometimes succeeds, but frequently fails—generally speaking, without knowing how or why. Sir William Preece has just been attacking this pernicious system—or want of system—from a scientific standpoint, and Mr. Davis here proffers a little friendly advice and assistance of a practical nature.

His experience as an accountant has convinced him that small builders are, as a class, bad book-keepers, and he sets himself to indicate a remedy for this unsatisfactory state of things. Specimen pages are given of the various books required in a small business, with instructions as to filling them up. The work may be described as quite an elementary treatise—the author will hardly claim more for it—and it is written in a simple and intelligible form. Mr. Davis writes like a physician imparting a few useful hints as to the treatment of a disease, accompanying his advice with a warning not to attempt too much doctoring yourself. If the symptoms are at all serious, call in an accountant.

The Private Street Works Act, 1892: Being a Practical Guide to the Working of the Act. By JOSHUA SCHOLEFIELD, Barrister, and GERARD R. HILL, M.A., Barrister. London: Butterworth & Co. 1902.

THIS is an extremely useful and well-arranged work—we may add well printed and bound also—on a subject which every day grows in importance, for between 1893 and 1902 437 Urban District Councils adopted the Act of 1892. Briefly, we have a short historical *résumé* of the legislation in regard to the drainage and repair of what may be called private streets; then a dissertation on the Act; and finally an appendix containing the Act itself, and portions of the Public Health Act, 1895, for the Act of 1892 is to be construed with the Public Health Act. The gist of the Act is contained in Section 6 (1), which, in a word, enables an Urban Authority "to sewer, level, pave, metal, flag, channel, or make good," or light a street, or part of a street, and to apportion the expenses on the adjoining premises. In other words, the object of the Act is to assist in the orderly transformation of Rural into Urban Districts at the cost of rural persons before the new streets can become a charge on the Urban purse.

The Business Encyclopædia and Legal Adviser. By W. S. M. KNIGHT, Barrister-at-Law. With numerous illustrations, &c. In six volumes. Vol. III. London: The Caxton Publishing Co.

WE have already noticed the two previous volumes of this work. It is, therefore, here only necessary to say that in the present volume will be found articles on house tax, health, and safety of factories. Why not, we may ask, have the heading of "Factories" instead of several articles dealing with this subject? It has also two useful discussions on Leases and Libraries.

Redress by Arbitration. A Digest of the Law relating to Arbitrations and Awards. By H. FOULKS LYNCH SCHULER. Fourth edition, revised by D. F. RANKIN, M.A., LL.D. London: Effingham Wilson. 1902.

THE fact that this Digest has reached a fourth edition is sufficient proof that it has been a useful work. In form it differs from the majority of law books, for the material is set out in sections and numbered paragraphs. Some day we may hope that this branch of the law will be codified on the basis of this work.

The Englishwoman's Year-book. London: Adam & Charles Black. 1903.

THIS is a large and comprehensive annual containing information about all work in which women are concerned. A great proportion of it is of course beyond our sphere of notice, but we may remark that it contains useful information in regard to technical schools and art-schools for women, in which they may obtain training in subjects on which a good many of them are now successfully taking their stand by the side of men. The book seems very well arranged and very complete.

TRADE CATALOGUES.

MESSRS. HAYWARD-TYLER & CO. send us their catalogue of electrically-driven and other treble-barrel pumps, each type being illustrated. Among the pumps described there are special varieties for fire extinguishing, boiler feeding, sewage, sinking, deep wells, high lifts, hydraulic pressure, and air compression. Some of the illustrations show the method of casing the gearing completely by removable covers.

We have received from Messrs. Ewart & Son, Ltd., of 346, Euston-road, a catalogue of their "Smoke-curing Appliances," and another containing illustrations and descriptions of their "Safety Geysers," baths, &c. In the first we notice their "Empress" and other revolving cowls, and a number of fixed cowls; many of these are made with the heads and bases in separate pieces, so that, if one cowl should prove unsatisfactory, the head can be removed and another of different type fixed on the same base. This firm's geysers are too well-known to call for detailed description; they are of various kinds, for working under pressure or otherwise. The safety taps are valuable fittings. The common objection to geysers is that they consume an enormous amount of gas, and this is no doubt true of many geysers. This is due in many cases to excessive pressure of gas, and we think that geyser manufacturers would be well advised in publishing actual tests by some independent person, stating the amount of gas consumed in raising the temperature of a certain quantity of water a certain number of degrees, the pressure of the gas being also recorded. In addition to bath-geysers, Messrs. Ewart & Son make gas-heated boilers for hot-water warming apparatus and other purposes, and also tinned or galvanised sheet-iron baths and bath fittings of various kinds.

The General Electric Co., of Queen Victoria-street, have sent us a catalogue of their "Robertson" electric lamps. It is very complete, and many novelties are shown. Their night-light lamp ought to become popular, as it would be very much more economical than the ordinary method of dimming a bedroom lamp. Tables are given of the average life of the "Robertson" lamps, and figures are given to show the false economy of using "cheap" lamps. We were pleased to note that every lamp is photometered separately, but we should like to see the certified copy of the Board of Trade standard volt which they say they use for reference. A lengthy experience of "Robertson" lamps has led us to regard them as quite satisfactory.

They have also sent us an illustrated circular dealing with portable accumulators, hand-lamps, and electrical accessories for motor-cars. The difficulty usually experienced with small accumulators is the question of charging. The ordinary methods are practically prohibitive owing to their cost. To get over this drawback the G. E. Co. make a small rectifier for alternating current supply and a complete small motor generator for direct current supply, so that small accumulators can be charged quite economically. Now that accumulators are used so largely for carriage

motor-car, and bicycle lights, these cheap methods of charging ought to be widely used. Complete lists of motor-car sparking-plugs, ignition-coils, small volt and ampere meters, &c., are shown, and the prices compare favourably with other catalogues.

BOOKS RECEIVED.

PROCEEDINGS OF THE INCORPORATED ASSOCIATION OF MUNICIPAL AND COUNTY ENGINEERS. Vol. xxviii. Edited by Thomas Cole, Assoc. M.Inst.C E. (E. & F. N. Spon.)

Correspondence.

THE QUANTITY SURVEYOR.

SIR,—So soon as any professional association has acquired strength and reputation, some attempt is made to commence a rival one on similar lines.

Such a one is usually made easy of access by its acceptance of any and every applicant. Examination is usually dispensed with ; when there is one it is commonly beneath contempt.

As the membership confers the right to use a set of letters impressive to a public which rarely understands them, the ambitious person, who has a judicious horror of examinations, is surely attracted.

The currency of a new set of distinguishing letters following the names of comparatively incompetent persons cannot fail to injure the reputation of quantity surveyors as a body.

Such an association as that proposed by Mr. H. Wood has been suggested a number of times within the last twenty years, but, fortunately, it has not been popular.

I strongly deprecate the proposal to establish an association exclusively composed of quantity surveyors. Their interests are thoroughly cared for by the Surveyors' Institution, and I submit that any action which tends to weaken that institution should be opposed by quantity surveyors with all their might.

Whether their influence will be of any avail in restraint of the efforts of persons avid of cheap distinctions is questionable.

JOHN LEANING.

SIR,—I have read with much interest Mr. W. Hoffman Wood's letter appearing in last week's issue of your paper.

The suggestion he makes has, to my knowledge, been frequently expressed by London quantity surveyors, but as yet with no success.

The reason, I venture to think, is not far to seek. So long as the honourable profession of quantity surveying is upon its present "cut" basis in London, an allied and distinctive association would be wellnigh impossible.

The recognised scale of charges for the preparation of bills of quantities is 2½ per cent. (two and a half per cent.) upon amount of accepted tender. How many surveyors obtain this fee ?

I fear that there has long been a spirit of commercial competition creeping into the profession which must sooner or later degrade it.

I believe, at the present time, that the great majority of London quantity surveyors would be willing, if properly approached, to assist the formation of such an association as Mr. Wood suggests. The first work of such a body would have to be the suppression of "tendering" for the preparation of bills of quantities.

I, for one, should be glad to give help, either financially or otherwise, for the consummation of so worthy an object, but think that the idea would be more sure of success if the initial steps were taken by one of the large firms of repute.

F. B. HOLLIS.

ARUNDEL BUILDING ESTATE COMPETITION.

SIR,—Will you kindly spare us a little of your valuable space in which to protest against the unfair methods adopted by the Arundel Town Council in their recent competition for laying out a building estate of 44 acres.

Before obtaining the requisite particulars competitors had to deposit 1*l.*, which was sacrificed if they did not send in a design. They were then furnished with a litho. plan of the ground, and a printed document which contained absolutely nothing to guide one as to the limit of cost of the scheme, or the class of property required to be erected on it. That was left entirely to the competitor. No levels were shown on the litho. plan, so that every competitor had to take his own levels over an extremely difficult and hilly piece of ground. Would not much valuable time have been saved if the ground had been previously contoured and the levels marked on the litho. plan ?

We have been officially informed that our scheme was not successful, but the names of the successful competitors and the assessor were not given us. We see by a report of the meeting of the Town Council in a local paper that thirty-three designs were sent in, and that an "expert" was appointed to report on them at the munificent fee of 10*l.* 10s. Now, could any professional gentleman possibly devote the time requisite to go carefully through thirty-three sets of plans, estimates, and reports for such a paltry sum, especially as we understand he made a special journey from London to go through them at Arundel ?

Is it usual for the local surveyor to be allowed to compete in competitions held by his Council, as in this case ? We consider it a great breach of professional etiquette.

Above all, the first premium has been awarded to a firm who sent in no levels or sections of their proposed new roads and sewers, without which, how does the "expert" or the town council know if their scheme is practicable, or if it can be carried out for the estimated amount ? Personally, we feel sure that it cannot be done for half as much money again.

Regardless of the fact that one of the great difficulties of the whole scheme was to lay out the ground to suit the requirements of the district, the paper finishes its Report with the following :—"It will be clearly understood that no one qualified to judge has yet asserted that any of the plans is the best plan for Arundel to adopt. That question has not been raised yet. All that has been decided is that of thirty-three plans, produced without reference many of them to the town's needs, these are better than the rest."

After this, need anything further be said ?

EQUITY.

HYDE PARK CORNER AND PICCADILLY.

SIR,—In your very valuable and detailed account of *Hyde Park Corner, &c.* (the *Builder*, p. 10, January 3, 1903) I missed an allusion to *Winstanley's Waterworks*, which would add to the historical interest Winstanley was swept away in 1703, in the Eddystone Lighthouse of his own design ; but advertisements in the original *Spectator* show that his Waterworks at Hyde Park Corner were carried on by his widow up till 1711. The *Waterworks* or Water-Theatre appears to have been a precursor of the Polytechnic of the days of Professor Pepper ; and visitors are directed, in the *Spectator* advertisements, to look for it in Piccadilly at Hyde Park Corner, and to recognise the house by a windmill on the top. The windmill would serve to pump the water to a cistern at the top of the house, and a plentiful supply of water (as at Sadlers Well) was obtainable from the Serpentine reservoirs in Hyde Park close by.

Henry Winstanley is a name familiar in other respects to the architectural world for his interesting collection of measured drawings of Audley End and other places.

A. G. GREENHILL.

*** We print Mr. Greenhill's letter, as it draws attention to an interesting subject ; but there was no omission on our part. If he looks again at the heading of our article he will see that its limits are defined by the dates "1801—1900." The Chelsea Waterworks did not come into the century treated of.—ED.

The Student's Column.

BUILDERS' TOOLS AND THEIR USES.

INTRODUCTORY.

IT is strange that while so much has been written concerning building construction and the trades embodied, no author has ventured on more than a passing allusion to the tools used by the various workmen, and where such references have occurred the information has been of the scantiest and the illustrations exceedingly few. A little consideration, however, will show that there is more in them than meets the eye, that good workmanship and finish depend upon the proper handling of good tools, and that it is desirable every student of architecture should fully understand these technical uses, and not be content with merely noticing a few implements on the works, of which he knows little about the employment. There are many tools, also, which belong to the workshop but are never seen in immediate building operations, of which he should be equally cognisant. It is with the object, therefore, of bringing the subject, treated as a whole, before the architectural student, that these articles have been compiled.

It is extremely difficult to know where to draw the line between builders' tools and builders' plant, but nothing has been omitted which could reasonably be described under the former head, while in some instances it has been thought desirable to include several appliances which strictly come under the latter title.

Similarly, it has not been easy to select and describe representative tools, but those not usually found in the ordinary builders' yard have been eliminated, especially the innumerable patent contrivances to which there is no finality. Of these it is impossible to treat. The descriptions have been arranged under the various trade heads, and it is hoped the system adopted will give facilities for ready reference.

CHAPTER I.

Excavator's Tools.

The following tools, &c., are employed by the excavator :—

1. Pickaxe.
2. Mattock.
3. Spade.
4. Grafting Tool.
5. Shovel.
6. Wheelbarrow.
7. Basket.
8. Crowbar.
9. Lines and Pegs.
10. Square.
11. Boning Rods.
12. Level.
13. Rods.
14. Rammer.
15. Pipe Scraper.
16. Maul.
17. Carts, Waggons, &c.
18. Boring Tools.

These will now be described in the above order.

The *Pickaxe* is used for picking up and loosening hard ground. The interchangeable navvy pick shown in fig. 1 is, perhaps, the most usefully shaped implement, one end being pointed and the other of chisel form. Sometimes both ends are pointed, and these should be of ground steel. They can be supplied separately, so that when an old one wears down a fresh point is welded in its place. The weight varies from 5 lbs. to 10 lbs., the heads being of solid cast steel, 2 ft. across, and the shafts of ash or hickory, 2 ft. to 3 ft. long. Picks may be of iron with steeled points, but solid steel throughout is best.

The *Mattock* is a kind of pickaxe, with a shape indicating its particular use as represented in fig. 2. The edge of the blade is 2½ in. wide, and the shaft should be hooped and ferruled.

The platelayer's beater is a tool something like a pickaxe and mattock combined, and is used by railway men in lifting sleepers and rails on the permanent way.

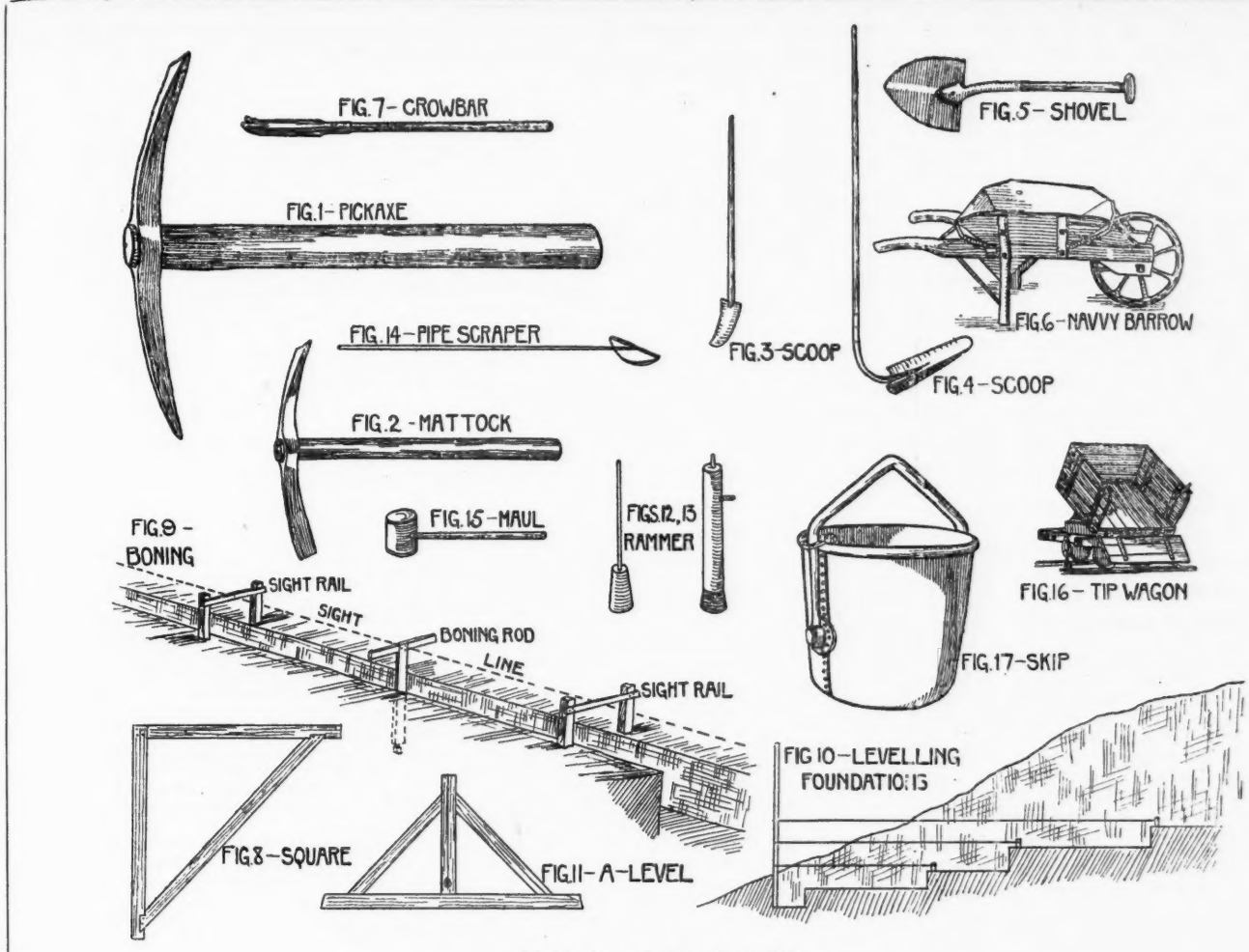
The *Spade* is too well known to need illustration. The blade is about 12 in. long by 8 in. wide, of solid steel, and should be treaded, *i.e.*, bossed out at the top to receive the foot, and the handle is either crutch or D-shaped. The extreme length from end to end is about 3 ft. 6 in. An "old man" is the excavator's term for the piece of wood used for cleaning spades.

Draining tools are spades with long and narrow blades. In some drainage work where the trench is very narrow, it is not possible to get a shovel of the ordinary width into the trench to remove the loosened earth. For this purpose scoops are employed of the forms shown in figs. 3 and 4.

The *Grafting Tool* is a narrow spade for digging stiff clay. It has a contracted cast-steel blade about 18 in. long, slightly curved in section. When working in hard and stiff materials, continually pressing down on the blade of the grafting tool is both painful to the feet and damaging to the workman's boots, so steel boot plates are often provided for the labourers. These consist of a thin steel plate fitted underneath the instep of the boot, and secured by leather straps passing over the instep.

The *Shovel* is used for throwing out the soil. The ordinary pattern of universal or common shovel should have a solid cast-steel blade, 12 in. long by 9 in. wide, slightly rounded at the cutting edge, with a total length of about 3 ft. 6 in. from end to end. Shovels with pointed ends, however, are much favoured (fig. 5). The "London" pattern has a square instead of a pointed end. The helves should be bent so as to enable the person using the implement to bring the blade flat upon any surface without excessive stooping.

The *Wheelbarrow*, navvy, intrenching, is illustrated in fig. 6. The frame is of ash or elm, with iron stays and bolts to strengthen it, and the wheel is of cast iron, 17 in. diameter. Where there is a large amount of wheeling barrows made of steel plate may be used with advantage, on account of their superior strength, durability, and lightness. Barrows should not exceed 9 in. in depth, and their sides ought to be splayed with a slope of 2 to 1. It is desirable to have hooks placed on their sides to receive a shovel and a pick.



Illustrations to Student's Column.

Barrows hold about $\frac{1}{10}$th cubic yard of loose stuff, and $\frac{1}{8}$th cubic yard of soft clay, heaped up.

Intimately connected with wheelbarrows are barrow-runs, which are formed of planks, supported at their upper ends by box-horses or trestles if necessary, to ensure a non-yielding and speedy track for the removal of the soil. The ordinary length of a barrow-run is 22 yards, and the steepest inclination should not exceed 1 in 12 where the men are unassisted. To be economical, removal by barrows ought not to exceed two runs, or 44 yards; for a greater distance—say, up to 100 yards—dobbin carts will be of service, while for greater lengths the use of waggons and tramways will be necessary. The number of pickmen, shovellers, and wheelers must be carefully apportioned so as to execute digging with speed and economy.

Barrows, when left on the works, may be secured at night by passing a chain through each wheel and fastening it with a padlock.

Handbarrows will be considered under "Freestone Mason."

Baskets are only wanted where barrows are inconvenient, such as in moving stuff from the inside to the outside of a building. They generally hold about a bushel, or $\frac{1}{27}$ of a cubic yard, though other sizes contain from $\frac{1}{2}$ to 2 bushels.

The *Crowbar* is required for moving heavy obstacles and breaking up concrete, &c. Fig. 7. It is of iron, with a claw at one end, and a length of about 5 ft. A pinching bar only differs from a crowbar in the absence of the claw, the two terms being frequently interchanged.

Lines and Pegs are used for setting out trenches and other excavations.

A *Square* is employed for setting out work at right angles. It merely consists of two lengths of wood at an angle of 90 degrees joined together by a tie piece, as in fig. 8. Tee-squares are used for a similar purpose. Where a wooden square is not available the following method may be adopted:—A tape is taken at 30 ft., 40 ft., and 50 ft. (or any multiple of 3, 4, and 5), and, being held at these distances, pegs are there put down. Lines can then be marked out on the ground along the 30 ft. and 40 ft. traces, giving the desired right angle.

Boning Rods are demanded for setting out the gradients of the bottoms of pipe trenches. They are T-shaped instruments, practically T-squares, of 3 in. by $\frac{3}{4}$ in. stuff, and of different lengths according to the levels, but all boning rods belonging to one set are exactly of the same height, usually 3 ft. The operation is called "boning," and consists in ranging a line of uniform inclination from two given points in it. These points are denoted by stakes, a boning rod being held upright on the head of each, and a third, placed vertically between the two, on a peg driven in the bottom of the trench, is ranged or boned in the same straight line with the other two stakes. If the bottom of the cutting is in a true gradient, the tops of the three rods will be in one straight line and parallel with it, with a uniform fall. Sight rails are also put up at each end of the line of pipes, and the central line distinctly marked on each, when the head of the boning staff should coincide with the line of sight between them, and the exact level of the invert of the drain will be indicated by the foot of the staff. Pegs are then driven in the bottom of the trench, each peg being plumbed and boned to the level of the invert, so that the row of pegs is in the exact line of the bottom of the pipes. A level and staff are required to plant each pair of stakes to arrange for the desired fall. The trench should be excavated in a perfectly straight line to the necessary depth, the bottom being well rammed and levelled to the required slope. Fig. 9 illustrates the operation of boning and the use of boning rods.

The *Level* is used for determining whether the bottoms of trenches for foundations are horizontal or not. A lath, or straight edge, several feet long, is rested on the bottom of the excavation, and the horizontality of the foundation is then tested by means of an ordinary spirit level placed on the top of the straight edge.

In the case of stepped foundations on a sloping site, where the heights of the ground floors must necessarily vary, the different levels are determined as shown in fig. 10, where a pole or rod is placed at the bottom of the trenches, and the separate heights marked off on it, which is managed by means of pegs and lines as indicated in the sketch.

The A-level, as it is called from its resemblance to the letter A, is merely an adaptation of the plumb level for determining the accuracy of stone paving, road surfaces, &c. See fig. 11.

Rods are used as guides in setting out the widths of the trenches, &c. They are merely slender pieces of wood, about 10 ft. long and 1½ in. square, on which are scaled off full size with a pencil the dimensions of the digging, and are then laid out flat upon the ground to gauge the lines of excavation.

The *Rammer*, pounder, or punner, is employed for ramming and consolidating the earth, especially in trenches. It is invariably of wood, with a short handle at the top and side, and the bottom either having an iron shoe, or being hooped with iron, to prevent splitting or bulging out (fig. 12). Another shape is that shown in fig. 13, where the handle is 3 ft. long and the butt only 9 in. in length. A fair weight for the latter would be about 10 lbs.

The *Pipe Scraper* is wholly made of wood, and is very convenient for scraping off the surplus cement inside drain pipes when forming the joints (fig. 14).

The *Maul* is a heavy wooden mallet, hooped with iron, and gripped with both hands. It is indispensable for driving posts, heavy stakes, and pegs (fig. 15).

Carts, Waggons, &c., properly come under the head of builders' plant, but as they are necessary adjuncts to the excavator when extensive digging operations are in progress it has not been thought out of place to make brief allusions to them.

A dobbin cart is a three-wheeled cart containing about ½ cubic yard of earth. It is drawn by one horse, and guided and tipped by a man in attendance.

A tip waggon, or earth waggon, is for the purpose of removing spoil from the site to a considerable distance by running on temporarily fixed rails, and being drawn either by horses or by a small locomotive. These waggons tip their loads either at the side or end, the appearance and action of a side-tipping waggon being disclosed in fig. 16. The frame is of oak, and the bottom, sides, and doors are of 1½ in. elm or deal. The wheels are of cast iron, with wrought-iron axles. A tip waggon may be used as an ordinary waggon when fixed in its horizontal position. The capacity varies according to the size of the waggon built for a certain gauge of line of rail, that for a 2-ft. gauge, holding 16½ cubic feet, being 4 ft. 6 in. long by 3 ft. wide by 1 ft. 2 in. deep; but the accommodation in-

creases up to 3 cubic yards, and the earth can be heaped up. Lowness of sides is of great advantage in filling. Tip waggons are also made of iron.

Skips are large boxes of iron, but sometimes of wood, framed to hold from ¼ to 1 cubic yard of spoil, and worked in connexion with steam cranes, so constructed that they can be made to discharge their contents over an earth waggon by turning over. Woodford's patent iron skips on this principle are the best, which release their contents by means of a readily disengaged catch, causing the box to tip and empty itself (fig. 17).

Steam excavating machines, or steam navvies, as they are often termed, are now largely in request for extensive undertakings, and by means of them the work can be performed so much more cheaply than by the employment of navvies alone that without such machines no contractor could hope to compete with others who contemplated their adoption.

Boring Tools are rarely called into service by the builder unless the foundations of his structures are very deep or for sinking wells, and therefore it will not be necessary to describe them here.

OBITUARY.

MR. TAGG-ARUNDELL.—We have to record the death, on December 7, at Calcutta, in his forty-fifth year, of Mr. William Tagg-Arundell, C.S.I. After having practised for a while in London, Mr. Tagg-Arundell quitted England fifteen years ago for India, where he soon achieved a prominent position as an architect, chiefly in connection with railway undertakings. During the interval 1894-9 he made the plans and designs for all the buildings of the Assam and Bengal Railway, including the head offices and station at Chittagong. He also designed the buildings and general engineering works for the East Coast, the East Indian, and the Delhi, Umballa, and Kalka Railways, and after the disastrous earthquake on June 12, 1897, at Shillong, he was employed for the reinstatement and rebuilding of many public offices and edifices there; he was the architect, besides, of several buildings in Delhi, Rawalpindi, Umballa, and Calcutta. Mr. Tagg-Arundell left the service of the Assam and Bengal Railway in November, 1899, and set up in independent practice in Calcutta, and very shortly afterwards was appointed consulting architect to the Government of Assam. Having already been elected a member of the Council of the Governor of Madras his public services were acknowledged by his admission as a Companion of the Star of India, and his subsequent appointment, in June, 1901, as a member of the Council of the Governor-General of India. Mr. Tagg-Arundell began his professional career as an articled pupil of the late Mr. J. Brown, of Norwich; he then became, we believe, an assistant in the offices of Mr. Basil Champneys.

GENERAL BUILDING NEWS.

CHURCH OF ST. HILDA, OLD TRAFFORD.—A commencement has been made with the work of building the new Church of St. Hilda, Old Trafford. The church has been designed by Mr. F. P. Oakley, of Manchester. At first the chancel, vestry, and two-thirds of the nave will be built, and will provide accommodation for 450. Externally, the church will be of brick and terra-cotta. Internally, the walls will be Accrington brick, with pillars of Runcorn stone. The contractor is Mr. W. Thorpe, of Old Trafford, and the contract has been let for 3,871*l.*

WESLEYAN CHURCH, DUNSTON, DURHAM.—On the 1st inst. the memorial-stones in connexion with a new Wesleyan Church to be erected at Dunston were laid. The building is estimated to cost 1,800*l.*, and to seat something like 350 persons. It has been designed by Messrs. Joseph Potts & Sons, of Sunderland, the contractor being Mr. William Hall, of Gateshead.

BAPTIST CHURCH, CROMER.—A Baptist Church has been erected in Church-street, Cromer, from the designs of the architect, Mr. A. F. Scott. The builders were Messrs. Girling & Smith.

THEATRE ROYAL, BRISTOL.—The Theatre Royal, King-street, was built in the year 1766, from a design by Mr. James Paty, and was opened on May 30 of that year by David Garrick. For the past six months the theatre has been in the hands of the builders, who have been making alterations and additions. The alterations have been carried out by Messrs. H. A. Forse & Sons, from the design of the architect, Mr. W. Skinner.

CHURCH TOWER, LISKEARD.—The new church tower at Liskeard has just been dedicated. The architect was Mr. J. Sansom, Liskeard, and the builder was Mr. S. Trehane.

BUILDING IN MANCHESTER. — Within the year ended October 31 855 sets of plans for all kinds of buildings in the city were submitted for approval to the Improvement and Buildings Committee of the Manchester City Council, and of these 754 were approved and 101 disapproved. In addition to these approvals, which related to permanent buildings, 78 licences were granted for temporary structures. New dwelling-houses to the number of 1,662 were in the same period certified as fit for habitation. During the past five years 11,124 new residences have been constructed, so that the yearly average has been maintained well above the level of 2,000. It has often been stated that at the time when the Ship Canal was opened Manchester had apparently arrived at her zenith, and was showing signs of coming decay in commerce and industry, and of a decrease in her population. Comparison with the figures of new houses in 1893, the year before the Ship Canal was brought into use, shows that side by side with the progress of the port has gone a steady increase in the number of inhabitants of our municipal area. The borough of Salford and other areas of local government within the radius of the Canal's influence can tell tales of proportionate advancement. The sum total of residences which have sprung up as the direct outcome of the making and working of the canal must be enormous. Three or four years ago it was publicly declared to be 20,000. Lately we have not heard any calculations or speculations as to the number which have since been erected. Coming back to city figures, it has to be added that whilst many buildings have sprung into existence, others have suffered from the ravages of time and wear. No fewer than 550 buildings in the city were reported to be dangerous in the past municipal year. In 445 cases out of this total it was found necessary to serve notices for the removal of the danger, which perhaps, as a rule, meant the removal of the structure affected. It will be borne in mind that dwelling houses formed only a proportion of the condemned structures, and that old walls, factories, warehouses, chimney stacks, and nondescript buildings were included. An important change with regard to public improvements in Manchester is the establishment of a City Architect's department to meet the extraordinary demands which were made upon the administration of the City Surveyor's Department under the old system, whereby architecture was but a branch section of Mr. T. De Courcey Meade's sphere of action. Mr. Henry Price was appointed the first City Architect. —*Manchester Courier.*

BUILDING IN GLASGOW.—During the past year the several trades associated in the building industry throughout the city have been in a prosperous condition. The relations between employers and employés have been of such a nature that no dispute has occurred, and the outlook at present bids fair for another year. The valuation of the linings granted by the dean of Guild Court of Glasgow during the year tops the record of any previous year, the value for this year being 2,549,698*l.* Only once before in the history of that court has the valuation exceeded two millions, and that was in the year 1876, which is sometimes referred to as the year of the height of the building fever. The valuation for that year was 2,125,249*l.* It may be noted that the valuation of linings for dwelling-houses alone for this year amounts to 1,458,710*l.*, being more than the value of the linings for all other purposes. Only in one other year since 1876 has the value of dwelling-house property alone exceeded one million, and that was in 1898, when it was 1,240,410*l.* There is no reason at present to suppose that the amount of this class of property is largely in excess of the demand. The rapidity of occupation as soon as the houses are fit for habitation is proof they are required, and with regard to houses of one and two apartments there are good reasons for stating that the supply convenient for those of necessity compelled to occupy them is not equal to requirements.—*Glasgow Herald.*

PROPOSED THEOLOGICAL COLLEGE, COTHAM, BRISTOL.—The "Initiatory Building Committee" of the Western College has approved of plans for new buildings at Cotham. The new college has been designed by Mr. Dare Bryan, of Bristol. The site is immediately opposite Highbury Chapel, and while the central entrance and tower will be at the corner of Hampton and Cotham Roads, the two wings of the college will front those thoroughfares, while at the rear will be a quadrangle surrounded by a colonnade. The central tower is to be carried to a height of nearly 90 ft., and forms a feature at the junction of the two main blocks. The exterior will be of red brick, with Doulting or Bath stone dressings. The entrance is in the form of an open loggia, giving access to both wings and also to the quadrangle. Going into this loggia to the right would be found an entrance hall and anteroom, a room for professors and committee men, and then, occupying the centre of the block, a library, and beyond the Principal's residence. The full size of the library is 47 ft. by 37 ft. It has been suggested that the room should be panelled up to the window sills, a height of 6 ft. 6 in., and that this and the bookcases and other fittings should be in oak. The vaulting and central portion of the ceiling would be in plaster, the latter being panelled. The beams, it has been proposed, should have eight supporting figures illustrating such subjects as Love, Joy, Peace, Patience, Gentleness, Faith, Meekness, and Temperance. The Principal's residence forms part of the block, but has a separate entrance and a garden extending to the back of the site. In the left wing (facing Hampton-road) is an entrance-hall and matron's room; occupying the centre of the block are two large apartments, which may be used separately as dining and common rooms, or thrown into one by the removal of the sliding doors. In the latter case they would give a room 60 ft. by 23 ft. At the end of this wing the kitchens and domestic offices are situated. The first floor of the two wings provides for a score of separate studies, a couple of lecture-rooms, and a hall. The second floor is entirely devoted to sleeping and bathroom accommodation. The architect has estimated the cost at 15,160*l.*, but in his report to the Committee, says this would only provide for the plainest possible construction and interior finish, and for a building of such importance and in such a position he thinks at least 20,000*l.* is required.—*Western Press.*

THE BUILDING TRADE IN NOTTINGHAM.—So far as the building trade is concerned, no very big jobs have been undertaken during the past year, although a large number of important contracts, commenced before last January, have been completed. The state of employment generally can be said to be dull. There has been a gradual increase in the number of unemployed, especially with regard to carpenters, joiners, bricklayers, plasterers, and plumbers. Masons and slaters are certainly not fully employed, and numbers of their workpeople are leaving the town. Taken on the whole, the market, then, has been in a state of decline during the past twelve months, and the prospects of the coming year are not over bright. Brickmakers are fairly active, and have had a very good year. Their employment, too, is good, owing to the fact that a large portion of their production is sent away to other towns. Consequently, the yards have been kept fully going, and the New Year promises well for the workers.

LONDON OFFICES FOR THE "BIRMINGHAM DAILY POST."—In juxtaposition to St. Bride's Church, Fleet-street, the new London offices of the *Birmingham Daily Post* have been erected. The lower story is of Cornish granite and the upper of Portland stone. Mr. John Belcher was the architect.

NEW ORPHANAGE AT ALDRIDGE. — A new orphanage is to be erected at Aldridge, for which Mr. F. W. Mager, C.E., is acting as Honorary Architect. The buildings will occupy a site of 3 acres in area, with a frontage of 98 yards to a main road, set back 30 ft. from the front boundary fence. For present purposes a building of oblong form with a central passage through the administrative department has been considered most advantageous. Future extension is to be by a block running out to the rear from the centre, the central passage of which would be directly under observation from the matron's room. Otherwise, passages will be as far as possible avoided. The committee decided upon a common dining-hall for boys and girls. The sick wards will be isolated by putting them at the top of the house in positions in the north and south ends of the building; the intermediate space between the wards and the staircase to be used as housemaids' closets and linen stores. The ground floor will contain dining-hall, master and matron's room, kitchen, office, scullery, laundry, store, larder, and boot-room. On the first floor, boys' dormitory (41 sup. ft. per bed), with lavatory containing six basins and two baths, 26 ft. by 8 ft.; girls' dormitory, with similar lavatory; master and matron's bedroom; and on the second floor, servants' dormitory, boys' sickroom, girls' sickroom. Outside offices will comprise boys' urinal and four closets, in boys' playground; five closets for staff and girls; coal-store and tool-store; the outside closets to be flushed with the waste water from lavatory basins and baths. There will be also an enclosed yard and a covered way from the coal-store to the kitchen. The total number of inmates provided for is forty, exclusive of master, matron, and servants. The estimated cost is 1,957*l.*

COTTAGE HOSPITAL, KINGSBRIDGE, DEVONSHIRE. —A new wing in connexion with the Kingsbridge Cottage Hospital was opened recently. The plans were drawn by Mr. Latham, and Mr. Pearce was the builder. The wing consists of two wards which will accommodate six patients.

CASUAL WARDS, HOLBORN.—On the 1st inst. the Chairman of the Holborn Board of Guardians (Mr. T. J. Bolton) formally declared open the new casual wards which have been erected at Little Gray's Inn-lane. The architects were Messrs. Smith & Coggin, and the builders Messrs. Lawrence & Son. The new wards give accommodation to forty-eight men and twenty-four women, and four rooms are set apart for women with children.

ELECTRIC LIGHT STATION, EXETER.—On the 1st inst. the foundation-stone was laid of the new electric light and power station at Exeter. The foundation stone was laid in what will be the entrance-hall, at the bottom of the main staircase. The main façades will be carried out in red brickwork, with free-stone dressings. The most prominent feature of the building will be a large chimney shaft, rising about 160 ft. above the ground, and the foundations of which will cover over 1,000 ft., being at the south-eastern end of the building. The section of the

building which is now being carried out has a capacity for plant of 2,500 h.-p. It will consist, on the ground floor, of an engine-room, 103 ft. by 45 ft., lined with glazed bricks; a boiler-house, 103 ft. by 56 ft.; a pump-room, repairing shops, test-rooms, and economiser chambers. The first-floor level will comprise committee-rooms, switch-rooms, mess-rooms, stores, offices, &c., all opening on to a gallery overlooking the large engine-room. Over the boiler-house will be an actual bunk capacity for 800 tons. The machinery necessary for generating the electricity is to be supplied by the Westinghouse Co. As much as possible of the material and fittings required are being provided locally, the ironwork for the roofs being manufactured by Willey & Co. The land required to complete the site cost 2,000*l.*; the building contract amounts to 14,000*l.*; equipment contract 30,000*l.* Mr. H. D. Munro is the electrical engineer; Mr. D. Cameron is the architect; and Mr. W. R. Brealy is the builder.

MOTOR WORKS, CHISWICK.—The Thornycroft Steam Wagon Co. are completing their motor works and offices at Hogarth-lane, Chiswick. The factory consists of ground floor, with various galleries for drawing-offices, pattern makers, stores, &c., the premises being lighted principally by extensive skylights. The offices consist of two halls, 24 ft. by 36 ft. each, with various rooms leading out of the same. The entrance hall is paved with marble mosaic, with marble thresholds. The architects are Messrs. Scott & Hanson, of Basinghall-street. The builder is Mr. S. Hunt.

NEW WARDS, ROYAL VICTORIA HOSPITAL, BOURNEMOUTH.—New wards have been erected at the Royal Victoria Hospital. The walls are of Purbeck stone, while the floors are fireproof. On the ground floor the men's ward, originally containing four beds, has been enlarged so as to provide eight additional beds, and on the first floor a small two-bed ward has been separated from the existing four-bed ward, which has been transformed into a large children's ward, providing accommodation for fifteen cots. A feature in connexion with this ward is a covered balcony, communicating with it by means of folding doors. In addition to the above, there has been some alteration in the construction of the roof, and on the second floor bedrooms for six nurses have been provided. The work of extension was commenced in August, 1901, and executed at a cost of over 2,100*l.* exclusive of the furniture, electric light fittings, &c. Messrs. George & Harding, the original contractors, were the builders, and Messrs. Creeke, Gifford, & Oakley the architects.

BUSINESS PREMISES, ABERDEEN.—Messrs. Watt & Grant, silk mercers, Union-street, Aberdeen, are carrying out alterations to their premises. The architect is Mr. A. H. L. Mackinnon, of Aberdeen.

SANATORIUM, WHELLEY, WIGAN.—The newly-completed additions to the Sanatorium of the Wigan Corporation, at Whelley, were opened recently. The additions are as follows:—A scarlet fever block, consisting of two wards for males and for females. The female ward is 48 ft. long by 26 ft. wide, and has eight beds; the male ward is 36 ft. in length by 26 ft. in breadth, and has six beds; and each ward is provided with bath and lavatory accommodation. Between the two wards there is a nurses' duty-room, 16 ft. by 12 ft., a storeroom for linen, an entrance hall, and a vestibule. In front of this block there is a covered verandah, approached by a flight of steps from the carriage drive. The height of the block is 13 ft. from floor to ceiling. An observation block, consisting of two wards, male and female, with two beds in each, these wards being used for patients whom it is necessary to keep under observation, with a view to determining the character of the disease as it develops. Between the two wards there is a nurses' duty room, 15 ft. by 14 ft. The block is provided with a movable bath, and the necessary lavatory accommodation, and has in front a verandah similar to that in the scarlet fever blocks. The height of the block is 13 ft. 9 in. Discharging block, for the accommodation of convalescent patients for a short time before they are allowed to leave, this being situated near the exit gate, and consisting of dressing and undressing rooms, a bath room, and a lavatory. Addition to the administrative block, consisting of a nurses' sitting-room and a dining-room, on the ground floor, each 24 ft. 6 in. in length, by 13 ft. in width; above these there being four bedrooms. There is also a new kitchen. The contractors for the erection of the buildings were Messrs. Wilson & Co. The structures are of brick, and harmonise with the older portion of the sanatorium, and the plans had been prepared by Mr. W. Bolton.

WORKMEN'S DWELLINGS AT HIGH WINCOBANK, SHEFFIELD.—At their meeting on the 31st ult., the Housing of the Working Classes Sub-Committee of the Sheffield Corporation had before them plans prepared by the City Surveyor, showing the suggested laying out of the estate at High Wincobank. They approved the plans, and decided to invite tenders for the erection of cottages on the land at a cost not exceeding 160*l.* and 185*l.* each, the tenders to be accompanied by plans. The accommodation to be provided consists of a living-room, scullery, two or three bedrooms, and bathroom. Premiums will be given for the best plans sent in. The matter was subsequently brought before the Health Committee and confirmed.

FOREIGN.

FRANCE.—The Académie des Beaux-Arts has elected Mr. G. F. Watts as a foreign corresponding member, in place of the late M. Siemiradski. Mr. Watts, who obtained a first medal in the exhibition of 1878, is also a Chevalier of the Legion of Honour.——M. Cormon, the painter, has been commissioned by the Government to execute, for the Museum of Versailles, a picture representing the reception of the Mayors of France in connexion with the 1900 exhibition.——M. Marqueste has completed the model for the monument to be erected in Père Lachaise cemetery to the memory of Falguière. It consists of a stele decorated with bas-reliefs reproducing some of the works of the master—the "Junon" and the "Petit Martyr." By the side of the stele stands a figure symbolising "Inspiration."——The Department of the Seine has selected for the site of the new Ecole des Arts et Métiers at Paris the ground formerly occupied by the abattoir of Vaugirard.——M. Cavé, architect, of Argenteuil, has proposed to the town of Vannes (Morbihan) a scheme for the construction of covered market, a library, and a theatre, at an estimated cost of 454,000 fr.——The Conseil-Général of the Basses Pyrenees has voted a sum of 538,000 fr. for the enlargement of the lunatic asylum at Pau.——M. Bellemain, architect, of Lyons, has been commissioned to carry out a Salle des Fêtes at Trevoux (Ain).——M. Doillet has been appointed architect for a new firemen's barracks to be built at Menilmontant, at a cost of 1,200,000 fr.——The bridge over the Seine at Asnières is to be rebuilt shortly; a new bridge is to be built between that of Clichy and Saint-Ouen. The two bridges will necessitate an expenditure of nearly 3,000,000 fr.——The exhibition of the Société des Amis des Arts at Pau will be held from January 15 to March 15.

A VICTORIA HALL AT MONTEVIDEO.—The Montevideo correspondent of the *Times* writes, under date November 20, in regard to a function which took place on November 14, when there was inaugurated the Victoria Hall, erected by the British residents in Montevideo to the memory of Queen Victoria. The hall, designed and built by the local English architect, Mr. John Adams, contains seating accommodation for about 600 persons on the floor and in the balcony, and is designed for balls, banquets, and social gatherings, while there is also a stage for concerts and dramatic performances. The façade is adorned with busts of Lord Tennyson, Sir Arthur Sullivan, and Sir Henry Irving, as representing the poetry, music, and drama of the later Victorian period.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—Mr. Matthew Garbutt, architect, has removed his offices from 40 Great James-street, Bedford-row, to Bishop's-road Station, Paddington, W.——Mr. J. R. Elliott, civil engineer and architect, of Burton Buildings, Parliament-street, Nottingham, has taken into partnership Mr. A. Goodwin Brown, civil engineer, who has been assistant to his father, Mr. Arthur Brown, M.Inst.C.E., the City Engineer of Nottingham. The practice will be continued at the above address under the firm name of Elliott & Brown.——Mr. Harry G. Assiter, F.S.I., has removed his offices from 19, Old Queen-street, Westminster, to 9, John-street, Adelphi, W.C.

WHITAKER'S ALMANAC AND PEERAGE.—We have received the usual annual issue of these useful books of reference. Whitaker's Almanac has again increased in size, and now contains 792 pages, an increase of 425 pages since its foundation. The hundred pages dealing with the Indian Empire and the dominions beyond the seas have been subjected to a thorough revision. Tables are now provided showing the contents in outline of the Almanac proper, and of the supplementary matters. The latter include an article on the commerce of Great Britain during the South African war, another on the Education Bill, and other new matters.

THE GRAMMAR SCHOOL, SLEAFORD.—Mr. Jesse Clare, of Sleaford, is appointed architect of new school buildings to be erected for the Governors of the Charity, who have accepted a tender of 1,948*l.* from Messrs. Maxey & Sons, of that town. The Free Grammar School was founded in 1603 by Robert Carr, of Aswarby, who endowed the trust with a freehold estate of 130 acres in the parish of Gedney, Lincolnshire, and a master's residence. The parish Church of St. Denis, Sleaford, contains several monuments of the Carr family, formerly lords of the manor, including that of the founder of the school. The schools and master's house were rebuilt seventy years ago.

THE SONNING BRIDGES.—Mr. W. A. Ducat, one of the Inspectors of the Local Government Board, held an inquiry at the County Hall, Oxford, on the 31st ult., with regard to the proposal of the Oxfordshire County Council to borrow certain moneys for the rebuilding of Sonning Bridges and for other purposes. No opposition was offered to the proposal. The Clerk to the County Council explained that the amount it was proposed to borrow for the rebuilding of Sonning Bridges was 8,000*l.* There was considerable traffic of all kinds over the bridges. The three bridges had become weak and were condemned as unsafe for heavy traffic. The County Council were advised that the bridges were incapable of repair and restoration, and they had decided there was no alternative but to rebuild them. In rebuilding the county had to bear in view the necessity for permanent strength and of building a structure capable of carrying the heaviest modern traffic; they had also to deal with a flat roadway, which did not permit of curved arches, and, further, they had to provide sufficient waterway to satisfy the requirements of the Thames Conservancy. Plans had been laid before the Thames Conservancy, and they had approved of them. Under those conditions the County Council decided on building an iron bridge with iron pile supports and steel girders, having a span of 50 ft., and also on strengthening the present brick abutments and widening the roadway to 24 ft. The placing of an iron bridge over any portion of the River Thames was not wholly popular, and they had encountered a certain amount of adverse public criticism. The County Council had given fair consideration to it, and had sent Committees to visit the bridges and had discussed the objections. Having in view that there must be a permanent structure in the interests of public traffic and the requirements of waterway insisted upon by the Thames Conservancy, the Council had come to the conclusion that the proposed structure was the proper kind of bridge to erect over this portion of the river.—The inspector subsequently visited the Sonning bridges which it is proposed to demolish, and will report to the Local Government Board in due course.

THE LABOUR MARKET IN THE COLONIES.—The January circular of the Emigrants' Information Office, 31, Broadway, Westminster, states that in New South Wales, owing to the severe drought, there is no demand for more labour at the present time, and many persons are unemployed; it is hoped that the recent fall of rain may improve prospects. The Government is endeavouring to relieve the distress by promoting public works. The ordinary emigrant, without means of his own, should not go to New South Wales at the present time. In Victoria there is no general demand for more labour, and many men are out of work. No large public works are being proposed by Government which might provide employment. In Cape Colony there is a good demand for skilled mechanics, especially those in the building trades, in the inland towns except Kimberley, but not at Cape Town or other towns on the coast, where a great many are out of work. In Natal a great many skilled artisans, more especially carpenters and those in the building trades, have recently arrived, so that those going now do so at their own risk of finding employment. Permits are still required by those proceeding to the Transvaal and Orange River Colony; they are not issued in this country, but must be applied for at the permit office at the port in South Africa at which the emigrant lands. Application forms may be obtained at the Emigrants' Information Office, and elsewhere. The latest reports as to labour in the Transvaal are to the effect that the supply both at Johannesburg and Pretoria is more than sufficient, that a great many skilled mechanics and large numbers of unskilled labourers are unable to find work, and that a good deal of distress prevails. Emigrants, therefore, are warned against going to the Transvaal at the present time, unless they have already secured employment there, or take not less than 100*l.* with them to meet the very high cost of living. In the Orange River Colony there is a fluctuating demand for good carpenters, masons, fitters, and painters. The cost of living is very high. Permits are necessary. By the new Lands Settlement Ordinance "The Land Settlement Board of the Orange River Colony" may dispose of Crown lands by sale or lease to any applicant who is not the owner or lessee of fifty acres or more of land in the Colony. Applicants may be required to apply personally. Those obtaining land either by lease or purchase must reside on and cultivate their land. Leases are for five years, renewable for five or ten years more, and the rent is 5 per cent. of the purchase price. Purchasers pay by instalments spread over thirty years, or may pay up after five years' occupation the whole of the purchase money then owing. As soon as the whole is paid up, and any advances have been repaid, the land becomes the property of the purchaser, who receives a grant thereof on perpetual quit rent. The Government may advance money to any such lessee or purchaser for the purpose of his effecting permanent improvements on the land.

ENGINEERING TRADES' REPORT.—Messrs. Matheson & Grant's Engineering Trades' Report states that there are fair prospects of activity for the coming year, and the engineering works of the country were never better prepared for it. Selling prices are, however, almost everywhere lower than in January last. Coal of the kinds used by engineers has been cheaper than in 1901; a conference regarding wages is now proceeding between the coal-owners and miners, both of whom claim alterations favourable to themselves, but further reductions are improbable. The output and prices of finished iron and steel have fallen, with the unfortunate circumstance for the makers that their materials have not fallen in proportion. The price of pig-iron has been upheld by large shipments to the United States, where the demands of the

iron-founders and steel-makers cannot be met by the American blast-furnaces. There is as yet little sign of this export diminishing; but, as the output capacity of their furnaces increases, or their home consumption falls off, the current may be reversed and iron shipped to England. The demand for bridges, piers, buildings and roofs has been lower in 1902 than in the preceding five years. Competition is keener and prices are lower in proportion to cost. There has been a fair amount of work in the extension and replacement of structures for the home railways, and a moderate export of steel work for bridges and harbours. The Committee appointed by the Institute of Civil Engineers to consider the standardisation of rolled sections of iron and steel, recommends a great reduction in the number of angles, channels, beams and other forms. This change tends to reduce the cost of structural work and has other advantages. The private Bills deposited for the coming session of Parliament represent a considerable aggregate of works interesting to engineers. None of the leading railway companies propose large schemes, nor are large additions to railway capital invited. No less than thirty-four municipalities seek powers for tramway undertakings, and there are forty private schemes, these latter being generally for wider districts around and between towns, many of them being put forward under the special procedure of the Light Railways Act. The large cities are going wide afield to obtain control of watersheds and water-bearing areas to satisfy their growing needs; and in connexion with these undertakings, machinery, pipes and plant on a large scale will be required. Few gas lighting schemes are presented; only extensions of existing works, and in this regard it is questionable if any entirely new gas lighting projects will ever again be proposed. Abroad, hopes of revival in the Transvaal are still deferred, but railway and mining projects in South, Central and Western Africa already signify the advance in works of public utility that may be expected under British auspices. The Assuan dam, the Uganda railway, and the development of mines north and south of the Zambesi, are not only important in themselves, but pave the way for further developments.

GLASGOW HOUSING SCHEME ABANDONED.—The Glasgow Corporation Housing Committee have decided to recommend that the scheme for providing 700 houses for workmen in the East End of Glasgow be not proceeded with. The estimated cost of the scheme was 100,000*l.*, and it was proposed to erect houses of one, two, and three apartments at an annual rental of 5*l.*, 8*l.*, and 12*l.*

BUILDING AND BUILDING MATERIALS IN BILBAO.—Mr. Ranald Macdonald, the British Consul, in a report to the Foreign Office on the trade and commerce of the consular district of Bilbao, mentions that the imports to that port in 1901 of building stones, cement, earth, &c., from the United Kingdom amounted to 7,782 tons. Two companies, with headquarters at Bilbao and San Sebastian, respectively, are working asphalt rock quarries in Alava, from which 3,600 tons of asphalt were obtained in twelve months. The price of asphalt rock at the works was 6s., and that of asphalt 1*l.* 19s. 6d. per metric ton. There are ten cement works in Guipuzcoa, where hydraulic cement is manufactured from natural rock. The total output in 1901 was 82,081 tons, manufactured out of 112,303 tons of rock. Cement is also manufactured at Sestao, out of slag from the blast furnaces. After being closed for some years for want of a proper technical administration this business resumed operations in 1901 with good prospects of success, due to the growing interest and reliability of the system of reinforced cement known as "ciment armé." This establishment can produce fifty tons daily. Considering the rapid increase in the population of Bilbao, and the insufficiency of house accommodation, of which complaints are general, there is curiously little speculative building. Most of the houses in the town especially in the modern part, are built in flats, very imposing in their exterior proportions, but sub-divided internally to a degree that leaves scant room to swing the proverbial cat. On the other hand, there is much activity shown in the erection of fine private residences, especially in the outskirts of the town near the sea, to which many rich inhabitants resort during the summer months. At Portugalete, Las Arenas, and other suburbs, rows of houses may be seen closed from November to May or later, the tenants paying high rentals all the year round for the pleasure of occupancy during four or five months. At San Sebastian extensive building operations are being carried on, and quite a new town of handsome villas and streets has sprung up in the neighbourhood of the beautiful church of Buen Pastor. A company is being formed for the purchase of the bull ring and the construction of a new theatre and an hotel. The electric lighting, the water supply, and the sanitary conditions of this charming watering-place are excellent.

DIARIES, &C.—The Builders' Accident Insurance, Limited (31 and 32, Bedford-street, Strand, W.C.), have issued a neat little memorandum book, alphabetically arranged.——The Campbell Gas Engine Company, Limited, Halifax, have sent us a useful little pocket diary and notebook, which contains an accident insurance policy for 500*l.*——From the Willesden Paper and Canvas Works, Ltd. (Willesden Junction, N.W.), we have received a tear-off date indicator which the firm have issued.——We have received from the Patent Victoria Stone Co., Ltd. (Hamilton House, Bishopsgate-street Without, E.C.), a useful folding blotting-pad and diary. The diary portion contains illustrations of some of the works where the firm's stone has been used.——The London Drawing and Tracing Office (98, Gray's Inn-road, W.C.) have issued a neat little card almanac for 1903.

EXCAVATIONS AT ATHENS.—The Athens correspondent of the *Daily Chronicle* has communicated to that journal as follows:—"The Greek Archæological Society has resolved upon the thorough excavation of the ancient Agora, or market-place, the centre of Athenian life in classical times. Owing to the extent of the ground to be excavated, the much increased value of land of recent years, the rise in wages, and the purchase of houses which now encumber the site, the work will be very costly, and is expected to occupy five years. But M. Kavvadias, the eminent archæologist, believes that most important discoveries will be made, and a strong committee has been formed for the prosecution of the scheme, which will be begun at once. Steps are being taken for the restoration of the fine Byzantine church at the Monastery of St. Luke the Younger, between Delphi and Livadia, which was recently the subject of a fine monograph by two members of the British Archæological School—Messrs. Schultz and Barnsley. The new Minister for Education is therefore showing the same zeal as his predecessor in archæological matters."

PROPOSED NEW BUILDINGS AT OXFORD.—The Hebdomadal Council have published an important statement in which they set forth what are the principal needs of the University in respect of provision for public teaching and for new buildings and institutions. Under the latter head they represent that at the Bodleian the most instant requirement is for additional storage room, which could be met by the construction, at a computed cost of 9,400*l.* (to include the shelving), of an underground chamber, as has been proposed. Other needed improvements include heating, electrical lighting, precautions against fire, more accommodation for readers, and an increased staff. The Keeper of the Ashmolean Museum and University Galleries states that a sum of at least 3,500*l.* will soon be required for upper galleries and additional cases, as the collections are rapidly extending; and that at no distant time new exhibition rooms, a coin-room, a lecture-theatre, and basement storage should be provided. Similar representations are made by the Keeper of the Hope Collection of Engravings and the Picture Galleries Committee. A laboratory for experimental research in psychology is asked for by the philosophical and some other professors upon estimates of 2,000*l.* for initial expenditure and 300*l.* annual maintenance, whilst the more pressing needs of various departments of the University Museum, Observatory, and Botanical Garden involve a capital outlay of 33,000*l.* or more, and a yearly expenditure of 3,050*l.* The new professorships asked for include one of Art in connexion with History. More adequate endowments are called for on behalf of the Chairs of Physics, Experimental Philosophy, Geology, and Zoology, and of the Slade Professorship, the Curatorship of the Pitt-Rivers Museum, and the Professorship of Applied Mechanics.

OPEN SPACES.—The Enfield District Council intend to give 7,000*l.* for 14 acres at Ponder's End for purposes of a recreation-ground.——The Windsor Town Council are about to lay out part of the "Bachelor Acre," in the middle of the borough, as a garden, at a cost of 800*l.*, and to give a portion of the rest for an enlargement of the adjoining Royal Infirmary and Dispensary.——The scheme for the preservation of Merrow Downs, about 260 acres, near Guildford, is now practically settled, as the R. D. Council have consented to waive their rights to dig for flints on the Downs as long as Lord Onslow, Lord of the Manor, observes a similar abstention, and they will contribute 50*l.* towards the maintenance of the space.——For a sum of 11,500*l.*, raised by public subscriptions and votes by the Oldbury and Smethwick Local Authorities, the Lightwood Estate of about 16 acres has been secured, together with an additional piece of land given by Mr. Howard Galton and Major Galton, as a public park for the City of Birmingham.——The General Powers Bill of the London County Council provides for contributions by them and the Lewisham Borough Council towards the purchase by the Camberwell Council of the site known as One Tree Hill at Honor Oak and the garden of Brunswick-square, and for a contribution by the Woolwich Borough Council of lands lying on the north side of High-street, Eltham, and adjoining the South-Eastern Railway Bexley Heath and Dartford line, for a public park or recreation-ground.——The Local Government Board have given their sanction to the borrowing, by the District Council of Southgate, Middlesex, of the necessary sum for purchasing Broomfield Park as an open space; the cost amounts to 26,000*l.*, one-fourth of which is promised by the Middlesex County Council. The house, which is approached along an avenue of elms, one of the finest in England, and stands in a park of some 70 acres adjoining Arno's Grove, was for many generations a seat of the Jackson family. It formed a hunting-lodge of James I., and contains a handsome staircase richly carved in oak; some of the walls and ceilings were painted by Sir James Thornhill.——The National Trust have issued an appeal for 400*l.* wherewith to purchase 9 acres forming the summit of Kymin Hill, near Monmouth, whence is obtained a magnificent view over the Wye Valley, the Forest of Dean, and the surrounding country as far as the Mendips, and the Clee and Malvern Hills. On the land stands the now partly decayed "Naval Temple," erected in 1800 "to perpetuate the names of those noble admirals who distinguished themselves by their glorious victories for England in the last and preceding wars," and dedicated to Elizabeth, Duchess of Beaufort, who was a daughter of Admiral Boscawen.

THE BUILDING TRADE IN WURTEMBERG.—The Foreign Office is in receipt of a report from Dr. Frederick Rose, H.M. Consul at Stuttgart, on the trade, &c, of Würtemberg for the year 1901 and part of the year 1902. Dr. Rose states that a careful survey of the industrial conditions prevailing in Germany during that period does not reveal any important facts tending to show that the hope of improvement so earnestly entertained on all sides has been realised to any appreciable extent. In Würtemberg, although a great increase in the number of unemployed was feared, the dismissals of workmen which actually occurred were comparatively few in number. Many firms did their utmost to retain their workmen, in spite of the decline of orders, by employing them at reduced hours of work. Wages, generally speaking, have not declined to any great extent. In some cases the weekly amount has been reduced owing to the shortening of the hours of labour and the restriction of the output, but, on the other hand, there were instances of a rise in wages of from 10 to 15 per cent. Although private building enterprise was very dull (owing to commercial depression, the scarcity of money, and the uneasiness felt by capitalists), the State found a use for the numerous unemployed workmen by the building of churches and schools and the completion of the Stuttgart Town Hall, which, in addition to the erection of hotels, &c., enabled the building trade to about keep pace with that of 1900. The dulness in the building trade naturally affected the demand for building materials somewhat heavily, the more so as in many cases yards had to be overstocked in 1900. In almost every instance manufacturers of building materials report a heavy falling-off in demand and price.

MEMORIAL WINDOW, CLIFTON CHURCH.—On the 22nd ult. the Bishop of Bristol unveiled a memorial window which has been erected in Emmanuel Church, Clifton, to the memory of the late Canon Brenan and Mrs. Brenan. The main portion of the window, which consists of three lights and tracery, represents St. Paul on Mars Hill, declaring to the citizens of Athens the "unknown God," to Whom they had erected an altar. Beneath this group, which is carried through the three main lights, the window is divided into three smaller panels, which represent other scenes in the life of St. Paul. In the large circular piece of tracery at the top of the window is a figure of our Lord, throned in majesty. Both the window and tablet were designed and executed at the studio of Messrs. Joseph Bell & Son, Bristol.

PATENTS OF THE WEEK.

APPLICATIONS PUBLISHED.*

25,227 of 1901.—J. MEEHAN: *Fittings for Electric Installation in Buildings.*

This invention relates to certain fittings for electrical installation in a building, such that the operations of the workmen employed are greatly facilitated. For this purpose a device termed an adapter is employed, which is a ring of porcelain or other non-conducting material having on its under side concentric circular grooves, in which wires are laid and held by cement. From the wires in the grooves branch wires pass up through holes to radial slots which extend to the circumference, each slot having at its outer end a metal bush and screw for holding the wire. The adapter is provided with a cover having several holes through which pass wires provided with fixing screws. The adapter is inserted and fixed in a junction box, which has lateral holes holding screwed nipples through which wires pass, and through the top of the junction box are screwed T or L Tubes also for passage of wires.

26,214 of 1901.—C. F. THEURER and H. C. HANSEN: *Kilns for burning Portland Cement lime Marl, Magnesite and the Like.*

This relates to a continuously working kiln for working with producer gases and for burning cement, magnesite and the like, comprising the combination with a sintering chamber of considerably smaller diameter than the kiln, of gas producers situated within the walls and around the said sintering chamber, descending gas conduits connected to said producers and opening out into the space between the cooling chamber and the sintering chamber.

* All these applications are in the stage in which opposition to the grant of a Patent upon them can be made.

81 of 1902.—S. H. HODGKIN: *Water Purifying and softening Apparatus.*

This relates to water-softening apparatus wherein the hard water to be softened is caused to pass into a mixing vessel in definite quantities by means of an automatic water-flushing apparatus provided with a piston plunger or float that rises and falls with the level of the water admitted to and discharged from such apparatus, and the motion of which is utilised to automatically stir lime or other solid chemical substance so as to admit of air readily mixing with it and forming the required liquid re-agent.

894 of 1902.—A. H. KENDRICK: *Screens for Sand and the Like.*

This relates to screens or sifters for sand and the like, provided with a screening mesh made up of a series of metallic strips or blades arranged edgewise within the frame of the screen and separated by intervening distance pieces; both the blades and distance pieces being carried upon rods or bars secured to the said frame.

1,122 of 1902.—H. H. LAKE (D. Wachtel & Co.): *Edge Runner Grinding Mills.*

This relates to an edge runner grinding and crushing mill with cylindrical runners and smooth grinding table characterised by a wheel-shaped runner frame supported merely by the central pillar and provided upon the underside of its crown with driving teeth, this frame guiding and driving the runners by means of vertically displaceable sliding bearings.

3,364 of 1902.—G. C. MARKS (C. Frerichs): *Manufacture of Artificial Stones, Building Blocks, Bricks, and the like.*

This relates to a process for the production of glazed facing stones, consisting in hardening calcareous stones by steam, then providing the same with a suitable glazing material, and finally burning the stones at the temperature required to impart the rigidity or solidity for building purposes.

4,917 of 1902.—G. C. MARKS (C. Frerichs): *Fireproof Bricks.*

This relates to the production of Dinas stones or fire-bricks from sand and lime, and consists in treating the moulded masses by steam before the burning operation to an extent sufficient to only partialiy harden the same.

19,866 of 1902.—L. OVEREND and J. C. OVEREND: *Sinks, Lavatory Basins, Baths, Yard-gullies, and the like.*

This relates to sinks, lavatory basins, baths, and the like, and consists of an outlet tube surrounded by an annular recess, and a loose cap supported by radial projections above such outlet tube in such manner as to form a trap.

19,896 of 1902.—MDE. E. N. N. BERTRAND: *Production of Mosaics.*

This relates to a covering in mosaic characterised by the combination of débris of potteries or stoneworks of which some have visible plane surfaces and others a visible concave or convex surface, according as the part of the design which they form, must serve to represent plane, hollow, or projecting parts.

20,238 of 1902.—W. H. BAKER: *Double-acting Combination Lock Valves.*

This invention relates to a double-acting combination lock valve for use upon pipes for water, gas, air, &c. One application of this invention is to gas-pipes in the immediate vicinity of meters, for the purpose of preventing dishonest persons from using the gas without the same having passed through the meter. The invention consists in the combination of a cap and a revoluble plug fitted with posts having shoulders to be engaged by a key, when said parts are used in a lock valve.

711 of 1902.—R. KENNEDY: *Liquid Meters for Measuring and Recording the Rate of Flow of, and Quantity of Water or other Liquid passing through, Pipes Channels or the like.*

This invention consists in, or connected with, liquid meters for measuring and recording the rate of flow of, and the quantity of, water or other liquid passing through pipes, channels, or the like, of a chamber having inlet and outlet openings, and provided with a flap or back pressure valve, inclined in its closed position, and fitting closely between the sides of the chamber in all its positions, a bottom portion of the chamber on the inlet side being made to slope downwards from a point some distance in front of the flap or valve.

2,086 of 1902.—T. WHITE & GAMLINS, LTD: *Machines for Boring Woodwork.*

This relates to machines for boring woodwork, and consists in the combination of a cam or cams formed with a groove and mounted on a shaft, with a pulley or equivalent organ carried on each headstock so as to travel the drills to and from the work in an automatic manner.

2,871 of 1902.—J. COOMBER and A. BAUMGARTEN: *Elastic Floor Coverings.*

This relates to an elastic floor covering formed of a series of sections, each of which comprises a long central strip formed on each of its opposite sides with a series of interlocking tongues and intermediate spaces whereinto the tongues of a contiguous section will fit, and whereby the sections will be secured together; the said tongues on said strips being alternately disposed on opposite sides of the strip.

4,951 of 1902.—J. RITSON: *Grip or Vice for Bending and Screwing of Pipes.*

This relates to a portable grip or vice for bending or screwing pipes comprising a trough-shaped bed forming a U-shape at one end and half round at the other end, adapted to be fixed to a bench by lugs and a cap or canopy secured on said trough fitted with a screw freely attached to a grip plate, for holding the pipe firmly in position when being bent or screwed.

21,064 of 1902.—A. J. BOULT (W. A. Koneman): *Pulverising Machines.*

This relates to a pulverising machine characterised by a horizontally-disposed rotating crushing bed having a frusto-conical crushing face, and a series of radially-disposed crushing rollers journalled beyond the periphery of the crushing bed in vertically adjustable supports.

22,104 of 1902.—A. ACKERMANN: *Construction of Girders for Building and other Purposes.*

This relates to a hollow girder provided with a tension rod or band bent over the ends of the girder and drawn down and secured on the underside of the girder at one or more points by one or more cross bars or the like.

22,391 of 1902.—G. KNOCHENHAUER: *"Lights" or Glazed Frames for Hot Beds, Forcing Frames, and the Like.*

This relates to a "light" or glazed frame for hot beds, forcing frames and the like, comprising a series of longitudinal bars, the upper and lower ends of which are traversed by screw bolts, the heads and nuts of which are embedded in the outer longitudinal bars, filling blocks being inserted between the upper and lower ends of the longitudinal bars.

22,263 of 1902.—J. RUEF: *Boilers for Water Circulating Heating Systems.*

This relates to a boiler for water circulating heating systems composed of separate members, and in which the smoke flues are arranged in such a manner that the combustion gases are drawn off from bottom part of fuel space, ascending laterally of the latter and having again to be drawn downwards, to pass from the chimney to the base part of the boiler.

18,350 of 1902.—R. HADDAN (E. J. B. Vache): *Lever Flush Valves.*

This relates to a valve for flushing water, placed in the column itself, and provided with a lever, extended externally and manipulating in the same way as an ordinary flushing apparatus. The invention consists of a cap preventing the valve from receiving direct the water pressure of the feed-pipe on its upper front, the orifices of water penetration in the said cap being preferably placed above the valve.

1,998, of 1902.—L. WILLIAMS: *Method of Treating Magnesite in the Manufacture of Bricks and like Magnesite Goods.*

This relates to the method of treating magnesite in the manufacture of bricks, and like magnesite goods. The raw material is ground in its crude state, and made into bricks or blocks direct, and these bricks or blocks are burnt at a high temperature. In its first operation the shrinkage is taken out of the crude material. The material being thus reduced, or dead burnt, is at this stage—after being ground—applicable for the making and repairing of furnace bottoms. In the second operation the residue of the first calcination is ground over again, and made into the finished brick, in the ordinary way, using finely-ground crude magnesite, clay water, a solution of hydrochloric acid, or other suitable matter, as a binding material. Any resinous or adhesive vegetable substance may be used, if desirable, as an auxiliary binding agent.

MEETINGS.

FRIDAY, JANUARY 9.

Architectural Association.—Mr. Andrew Oliver on "Old London; being Notes on Whitehall and the Strand," illustrated by old engravings and lantern slides. 7.30 p.m.

London Institution.—Rev. Canon Benham on "Old London: Old People."—III., 4 p.m.

Birmingham Architectural Association.—Mr. Bedford Lemere on "Architectural Photography."

MONDAY, JANUARY 12.

Royal Institute of British Architects.—The President, Mr. Aston Webb, A.R.A., will hold an "At Home" in the rooms of the Institute, No. 9, Conduit-street, from 8.30 p.m. to 11 p.m. A collection of drawings by the late Mr. J. F. Bentley will be on view.

Surveyors' Institution.—Mr. H. T. Scoble on "Rural Drainage and Sewage Disposal." 8 p.m.

Royal Philosophical Society of Glasgow (Architectural Section).—Mr. D. Murray, M.A., LL.D., on "The Architecture of Old Glasgow." 8 p.m.

TUESDAY, JANUARY 13.

Institution of Civil Engineers.—Mr. H. F. Joel on "Electric Automobiles." 8 p.m.

Institution of Electrical Engineers (Glasgow Section).—Mr. Wm. A. Chamen will open a discussion upon "Up-to-date Wiring in connexion with Corporation Supply." 8 p.m.

WEDNESDAY, JANUARY 14.

St. Paul's Ecclesiological Society.—Mr. C. R. Peers, F.S.A., on "Saxon Churches." 8 p.m.

British Archæological Association.—Rev. H. J. Dukinfield Astley, M.A., on "A Series of Norman Fonts in North-west Norfolk," with lantern illustrations. 8 p.m.

Society of Arts.—Professor W. Smart, LL.D., on "Industrial Trusts." 8 p.m.

Edinburgh Architectural Association.—Mr. R. Traquair on "Scottish Domestic Detail"—limelight views. 8 p.m.

Northern Architectural Association.—Mr. H. Cayley, M.A., on "Some Special Features of Somersetshire Churches," with lantern illustrations. 7.30 p.m.

THURSDAY, JANUARY 15.

Royal Institution.—Dr. A. J. Evans on "Pre-Phœnician Writing in Crete, and its Bearings on the History of the Alphabet."—I. 5 p.m.

London Institution.—The Rev. W. Marshall, M.A., on "The Romance of Architecture," illustrated. 6 p.m.

Leeds and Yorkshire Architectural Society.—Mr. Arthur Marshall on "Rome, Ancient and Modern." 6.30 p.m.

FRIDAY, JANUARY 16.

Institution of Mechanical Engineers.—Mr. H. F. Donaldson on "Cutting Angles of Tools for Metal Work, as Affecting Speed and Feed." 8 p.m.

Institution of Civil Engineers (Students' Meeting).—The fifth annual lecture to the Students will be given by Professor W. C. Unwin on "The Measurement of Water." 8 p.m.

SATURDAY, JANUARY 17.

Junior Institution of Engineers.—Visit at 3 p.m. to the New Electricity Works of the Metropolitan Borough of Shoreditch, Whiston-street, Haggerston.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

December 17.—By GERMAN & GERMAN (at Ashby de la Zouch).

Ashby de la Zouch, Leicester.—Tamworth-rd., three building sites, area 4,015 yards, f.	£2,325
Kilwardly-st., four freehold messuages	1,050
The Mount House Farm, 63 a. 2 r. 22 p., f.	2,500
Leicester-rd., a freehold field, 3 a. 1 r. 23 p.	165
Avenue-rd., toll house and private road, f.	445
Woodville, Derby.—Three freehold fields, 6 a. 3 r. 18 p.	1,325
Packington, Leicester.—Two messuages and four cottages, f.	330
Ibstock, Leicester.—A freehold messuage	250
Castle Donington, Leicester.—A freehold residence, area 1,210 yds.	365
Ten freehold messuages	550

January 1.—By THOMAS WOODS.

Feltham, Middx.—High-st., Wilton Lodge and 5 a. 2 r. 30 p., f., e.r. 150*l.*	2,970
High-st., Sydney House, with shop, f., y.r. 60*l.* 14s.	1,160
High-st., Ashleigh Cottage and oa. 1 r. 30 p., f., p.	450
Bedfont-rd., freehold cottage with blacksmith's forge adjoining, y.r. 23*l.* 5s.	470

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p. for possession; e.r. for estimated rental; w.r. for weekly rental; q.r. for quarterly rental; y.r. for yearly rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; la. for lane; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; av. for avenue; gdns. for gardens; yd. for yard; gr. for grove; b.h. for beer-house; p.h. for public-house; o. for offices; s. for shops.

PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

	£	s.	d.			
Hard Stocks	1	13	0	per 1,000 alongside, in river.		
Rough Stocks and Grizzles	1	10	0	"	"	"
Facing Stocks	2	12	0	"	"	"
Shippers	2	5	0	"	"	"
Flettons	1	7	6	"	at railway depôt	
Red Wire Cuts ..	1	12	0	"	"	"
Best Fareham Red	3	12	0	"	"	"
Best Red Pressed Ruabon Facing	5	0	0	"	"	"
Best Blue Pressed Staffordshire ..	4	5	0	"	"	"
Do. Bullnose	4	11	0	"	"	"
Best Stourbridge Fire Bricks	4	8	0	"	"	"
GLAZED BRICKS.						
Best White and Ivory Glazed Stretchers	13	0	0	"	"	"
Headers	12	0	0	"	"	"
Quoins, Bullnose, and Flats	17	0	0	"	"	"
Double Stretchers	19	0	0	"	"	"
Double Headers..	16	0	0	"	"	"
One Side and two Ends	19	0	0	"	"	"
Two Sides and one End	20	0	0	"	"	"
Splays, Chamfered, Squints	20	0	0	"	"	"

[*See also next page.*

COMPETITIONS, CONTRACTS AND PUBLIC APPOINTMENTS.

(For some Contracts, &c., still open, but not included in this List, see previous issues.)

COMPETITIONS.

Nature of Work.	By whom Advertised.	Premiums.	Designs to be delivered
Designs for University Buildings, Cape of Good Hope...	Agnt.-Gen. for Cape of Good Hope	400*l.*, 200*l.*, 100*l.*	Jan. 31
*Laying-out Piece of Land for Recreation Ground	Winchester Corporation	75*l.* and 25*l.*	Feb. 10

CONTRACTS.

Nature of Work or Materials.	By whom Advertised.	Forms of Tender, &c., supplied by	Tenders to be delivered
Cottages, &c., near Dublin	Blackrock U.D.C.	F. C. Caldbeck, Architect, 2, St. Andrew-street, Dublin	Jan. 13
Library Buildings	Ilkeston Corporation	Hunter & Woodhouse, Architects, Belper	do.
Additions to Workshops, St. John's Home	Ipswich Guardians	H. J. Wright, Architect, Museum-street, Ipswich	do.
*Road-making and Paving Works	Willesden District Council	Engineer to the Council, Public Offices, Dyne-road, Kilburn, N.W...	do.
House, West-road, Elgin	.....	Sutherland & Jamieson, Architects, Elgin	Jan. 14
Well Boring, &c., West Nichol, Jilsland, Northumberland	.....	H. W. Taylor, C.E., St. Nicholas Chambers, Newcastle-on-Tyne	do.
Wesleyan Church, &c., near Wadebridge	.....	S. Symons, Gonvena Cottage, Wadebridge	do.
Alterations, &c., Police Office	Leith Corporation	G. Simpson, Architect, Town Hall, Leith	do.
Surveyor's Materials	Lancaster Corporation	T. C. Hughes, Town Hall, Lancaster	do.
Sewerage Works, near Bristol	Kingswood U.D.C.	A. J. Salse, Surveyor, High-street, Kingswood	do.
Free Library, Waterford	Committee	A. E. Murray, Architect, 37, Dawson-street, Dublin	do.
Additions to Chapel, Pentre, Rhondda, Wales	do.	W. D. Morgan, Architect, Victoria Chambers, Pentre, Glam...	Jan. 15
Cottages at Workhouse	Lanchester Guardians	Newcombe & Co., Architects, Pilgrim-street, Newcastle	do.
Public Convenience, Henry-square	Ashton-under-Lyne Corporation	A. Lindley, Architect, Market-avenue, Ashton	Jan. 16
*Erection of Four Cubicles, Three Water-closets, &c.	St. George-in-the-East Guardians...	R. J. Tasker, 38, John-street, Bedford-row, W.C.	do.
Well, &c., Wrightington	Wigan Corporation	T. L. Hughes, Engineer, Chapel-lane, Wigan	Jan. 17
Bridge, near Harelaw	Weardale R.D.C.	G. W. Egglestone, Surveyor, Stanhope, Durham	Jan. 19
*Sixty Cottages, Merthyr Tydfil	Bronheulog Building Club	The Architect, 50, Glebeland, Merthyr Tydfil	do.
Additions to Baths, Smith-street	Rochdale Corporation	S. S. Platt, Borough Surveyor, Town Hall, Rochdale	do.
*Draining, Kerbing, &c., First-avenue, Cowley-place, &c.	Hendon U.D.C.	Engineer to the Council, Council Offices, Hendon, N.W.	do.
*Additions to Asylum, Devizes	.....	C. S. Adye, Surveyor, County Offices, Trowbridge	Jan. 20
Business Premises, &c., Spencer-road	Londonderry Equit. Co-op. Soc., Ld.	The Secretary, 59, Strand-road, Londonderry	do.
Water Supply Works	Street (Somerset) U.D.C.	A. P. T. Cottrell, Civil Engineer, 28, Baldwin-street, Bristol	do.
Water Supply Works, Colebrook	Liverpool Corporation	The Engineer, Municipal Buildings, Liverpool	do.
*Abutments, &c. Shrewsbury Station	L. & N.W. and G.W. Joint Railways	Joint Engineer, Shrewsbury Station	do.
*Block of Balcony Dwellings, London Fields, N.E. ...	London County Council	Housing Section of Architect's Dept., 19, Charing Cross-road, S.W.	do.
*Stables, Cart Sheds, &c.	Tottenham U.D.C.	Engineer to the Council, 712, High-road, Tottenham	do.
*Making-up Lamb-passage	Brentford U.D.C.	Council's Surveyor, Clifden House, Boston-road, Brentford	do.
Road Metal, &c., near Maidstone	Hollingbourne R.D.C.	H. J. Bracher, 33, Earl-street, Maidstone	Jan. 21
Steel Girder Rails (645 tons)	Stockport Corporation	J. Atkinson, Civil Engineer, Stockport	Jan. 24
*Making-up Streets	West Ham Council	Borough Engineer, Town Hall, West Ham, E.	Jan. 27
*Supply of Articles and Execution of Works	Chelsea Borough Council	Borough Surveyor	Jan. 28
*Pipe Sewer, &c., Baldwin's Hill, Springfield	R.D.C. of Godstone	Alfred Williams & Son, 14, Victoria-street, S.W.	Jan. 29
*Erection of Ten Cottages	Birmingham Corporation	J. Mansergh & Sons, 5, Victoria-street, S.W.	Jan. 30
*Eighty-five Houses, East Dulwich	Camberwell Borough Council	Borough Engineer, Town Hall, Camberwell	Feb. 4
*Coast Guard Buildings, Isle of Wight	The Director of Works	Superintending Engineer, Portsmouth Dockyard	Feb. 6
*Works of Road Widening	Middlesex County Council	County Engineer, Middlesex Guildhall, Westminster	Feb. 10
Stores, Batley	Co-operative Society, Ltd.	H. B. Buckley, Architect, 85, Commercial-street, Batley	No date
Rebuilding the Mason's Arms Inn, Whitchurch	Messrs. W. Hancock & Co., Ltd.	Feather & Wilson, Architects, Queen-street, Cardiff	do.
*Conversion of Villas into Shops, &c., Clacton-on-Sea ...	W. Douney, Esq.	G. Gardiner, Architect, 5, Marine Parade, Clacton-on-Sea	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Required.	Salary.	Application to be in
*Assistant (Borough Engineers' Department)	Southampton Corporation	100*l.*	Jan. 12
*Clerk of Works	Southend-on-Sea School Board	3*l.* weekly	Jan. 14
*Architectural Assistant	Kingston-upon-Hull School Board	100*l.*	Jan. 19
*Clerk of Works	Woolwich Borough Council	4*l.* 4*s.* per week	Jan. 20
*Assistant (Mechanical Section Chief Engineers' Dept.)...	London County Council	500*l.*	Feb. 2

Those marked with an asterisk (*) are advertised in this Number. *Competitions*, iv. *Contracts, pp.* iv. vi. viii. x. & xxii. *Public Appointments*, xviii. & xix.

PRICES CURRENT (*Continued*).

BRICKS, &c.

	£	s.	d.	
Best Dipped Salt Glazed Stretchers and Headers	12	0	0	per 1,000 at railway depot.
Quoins, Bullnose, and Flats	14	0	0	,, ,, ,,
Double Stretchers	15	0	0	,, ,, ,,
Double Headers	14	0	0	,, ,, ,,
One Side and two Ends	15	0	0	,, ,, ,,
Two Sides and one End	15	0	0	,, ,, ,,
Splays Chamfered, Squints	14	0	0	,, ,, ,,
Second Quality White and Dipped Salt Glazed	2	0	0	,, less than best.
Thames and Pit Sand		7	0	per yard, delivered.
Thames Ballast		6	0	,, ,,
Best Portland Cement		30	0	per ton, delivered.
Best Ground Blue Lias Lime		21	0	,, ,,

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 10s. 6d. per yard, delivered.
Stourbridge Fire-clay in sacks 27s. 6d. per ton at rly. dpt.

PRICES CURRENT (*Continued*).

STONE.

	s.	d.	
Ancaster in blocks	1	11	per ft. cube, deld. rly. depôt.
Bath ,,	1	7	,, ,,
Farleigh Down Bath	1	8	,, ,,
Beer in blocks	1	6	,, ,,
Grinshill ,,	1	10	,, ,,
Brown Portland in blocks	2	2	,, ,,
Darley Dale in blocks	2	4	,, ,,
Red Corsehill ,,	2	5	,, ,,
Closeburn Red Freestone	2	0	,, ,,
Red Mansfield ,,	2	4	,, ,,

YORK STONE—*Robin Hood Quality.*

Scappled random blocks	2	10	,, ,,
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2	3	per foot super. ,,
6 in. Rubbed two sides Ditto, Ditto	2	6	,, ,,
3 in. Sawn two sides slabs (random sizes)	0	11½	,, ,,
2 in. to 2½ in. Sawn one side slabs (random sizes)	0	7½	,, ,,
1½ in. to 2 in. ditto, ditto	0	6	,, ,,

PRICES CURRENT (*Continued*).

STONE.

	s.	d.	
BEST HARL YORK—			
Scappled random blocks	3	0	per ft. cube dld. rly. dpt.
6 in. sawn two side landings to size (under 40 ft. sup.)	2	8	per ft. super. ,,
6 in. Rubbed two sides Ditto	—		,, ,,
3 in. sawn two sides slabs (random sizes)	1	2	,, ,,
2 in. self-faced random flags	0	5	,, ,,
Hopton Wood (Hard Bed) in blocks	2	3	per ft. cube. deld. rly. depôt.
,, ,, ,, 6 in. sawn both sides landings	2	7	per ft. super. deld. rly. depôt.
,, ,, ,, 3 in. do.	1	2½	,, ,,

SLATES.

in.	in.	£	s.	d.	
20×10 best blue Bangor		13	2	6	per 1000 of 1200 at ry. dep.
20×12 ,, ,, ,,		13	17	6	,, ,,
20×10 best seconds ,,		12	15	0	,, ,,
20×12 ,, ,, ,,		13	10	0	,, ,,
16×8 best ,,		7	0	0	,, ,,

PRICES CURRENT (*Continued*).

SLATES.

in.	in.	£	s.	d.	
20×10	best blue Portmadoc	12	5	0	per 1,000 of 1,200 at ry.dp
16×8	best blue Portmadoc	6	0	0	,, ,,
20×10	best Eureka unfading green....	15	0	0	,, ,,
20×12	,, ,,	16	10	0	,, ,,
18×10	,, ,,	11	10	0	,, ,,
16×8	,, ,,	8	7	6	,, ,,
20×10	permanent green	10	10	0	,, ,,
18×10	,, ,,	9	0	0	,, ,,
16×8	,, ,,	6	5	0	,, ,,

TILES.

	s.	d.	
Best plain red roofing tiles..	42	0	per 1,000, at rly. depôt.
Hip and valley tiles....	3	7	per doz. ,, ,,
Best Broseley tiles	50	0	per 1,000 ,, ,,
Do. Ornamental Tiles 52	6		,, ,, ,,
Hip and valley tiles....	4	0	per doz. ,, ,,
Best Ruabon Red, brown or brindled Do. (Edwards)	57	6	per 1,000 ,, ,,
Do. ornamental Do. 60	0		,, ,, ,,
Hip tiles	4	0	per doz. ,, ,,
Valley tiles.....	3	0	,, ,, ,,
Best Red or Mottled Staffordshire Do. (Peakes)	51	0	per 1,000 ,, ,,
Do. Ornamental Do. 54	6		,, ,, ,,
Hip tiles	4	1	per doz. ,, ,,
Valley tiles.....	3	8	,, ,, ,,
Best "Rosemary" brand plain tiles	48	0	per 1,000 ,, ,,
Do. Ornamental Do. 50	0		,, ,, ,,
Hip tiles	4	0	per doz. ,, ,,
Valley tiles	3	8	,, ,, ,,

WOOD.

BUILDING WOOD.—YELLOW.

	At per standard. £	s.	d.	£	s.	d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in.....	15	10	0	16	10	0
Deals: best 3 by 9.....	14	10	0	15	10	0
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.....	11	10	0	12	10	0
Battens: best 2½ by 6 and 3 by 6 ..	0	10	0	less than 7 in. and 8 in.		
Deals: seconds	1	0	0	less than best		
Battens: seconds	0	10	0	,, ,, ,,		
2 in. by 4 in. and 2 in. by 6 in. ..	9	0	0	9	10	0
2 in. by 4½ in. and 2 in. by 5 in. ..	8	10	0	9	10	0
Foreign Sawn Boards— 1 in. and 1¼ in. by 7 in.	0	10	0	more than battens.		
¾ in.	1	0	0	,,		
Fir timber: Best middling Danzig or Memel (average specification	At per load of 50 ft. 4	10	0	5	0	0
Seconds	4	5	0	4	10	0
Small timber (8 in. to 10 in.)	3	12	6	3	15	0
Small timber (6 in. to 8 in.).....	3	0	0	3	10	0
Swedish balks	2	15	0	3	0	0
Pitch-pine timber (30 ft. average)..	3	5	0	3	15	0

JOINERS' WOOD.

	At per standard. £	s.	d.	£	s.	d.
White Sea: First yellow deals, 3 in. by 11 in.....	23	0	0	24	0	0
3 in. by 9 in.	21	0	0	22	10	0
Battens, 2½ in. and 3 in. by 7 in.	17	0	0	18	10	0
Second yellow deals, 3 in. by 11 in.	18	10	0	20	0	0
,, ,, 3 in. by 9 in.	17	10	0	19	0	0
Battens, 2½ in. and 3 in. by 7 in.	13	10	0	14	10	0
Third yellow deals, 3 in. by 11 in. and 9 in.	15	10	0	16	10	0
Battens, 2½ in. and 3 in. by 7 in.	11	10	0	12	10	0
Petersburg: first yellow deals, 3 in. by 11 in.	21	0	0	22	10	0
Do. 3 in. by 9 in.....	18	0	0	19	10	0
Battens.....	13	10	0	15	0	0
Second yellow deals, 3 in. by 11 in.....	16	0	0	17	0	0
Do. 3 in. by 9 in.	14	10	0	16	0	0
Battens.....	11	10	0	12	10	0
Third yellow deals, 3 in. by 11 in.....	13	10	0	14	0	0
Do. 3 in. by 9 in.	13	0	0	14	0	0
Battens	10	0	0	11	0	0
White Sea and Petersburg:— First white deals, 3 in. by 11 in.	14	10	0	15	10	0
,, ,, 3 in. by 9 in.	13	10	0	14	10	0
Battens.....	11	0	0	12	0	0
Second white deals 3 in. by 11 in.	13	10	0	14	10	0
,, ,, ,, 3 in. by 9 in.	12	10	0	13	10	0
,, ,, ,, battens.....	9	10	0	10	10	0
Pitch-pine: deals	16	0	0	18	0	0
Under 2 in. thick extra	0	10	0	1	0	0
Yellow Pine—First, regular sizes ..	33	0	0	upwards.		
Oddments	22	0	0	24	0	0
Seconds, regular sizes	24	10	0	26	10	0
Yellow Pine Oddments	20	0	0	22	0	0
Kauri Pine—Planks, per ft. cube..	0	3	6	0	4	6
Danzig and Stettin Oak Logs— Large, per ft. cube	0	2	6	0	3	6
Small ,, ,, ...	0	2	3	0	2	6
Wainscot Oak Logs, per ft. cube ..	0	5	0	0	5	6
Dry Wainscot Oak, per ft. sup. as inch	0	0	7	0	0	8
¾ in. do. do.	0	0	6½	-	-	-
Dry Mahogany— Honduras, Tabasco, per ft. sup. as inch	0	0	9	0	0	11
Selected, Figury, per ft. sup. as inch	0	1	6	0	2	0
Dry Walnut, American, per ft. sup. as inch	0	0	10	0	1	0
Teak, per load	16	10	0	20	0	0
American Whitewood Planks— Per ft. cube	0	4	0	-	-	-
Prepared Flooring—	Per square.					
1 in. by 7 in. yellow, planed and shot.....	0	13	6	0	17	6
1 in. by 7 in. yellow, planed and matched.....	0	14	0	0	18	0
1¼ in. by 7 in. yellow, planed and matched.....	0	16	0	1	1	6

PRICES CURRENT (*Continued*).

WOOD.

Prepared Flooring—	Per Square. £	s.	d.	£	s.	d.
1 in. by 7 in. white, planed and shot.....	0	11	6	0	13	6
1 in. by 7 in. white, planed and matched.....	0	12	0	0	14	0
1¼ in. by 7 in. white, planed and matched.....	0	14	6	0	16	6
¾ in. by 7 inch yellow matched and beaded or V-jointed boards	0	11	0	0	13	6
1 in. by 7 in. do. do. do.	0	14	0	0	18	0
¾ in. by 7 in. white do. do.	0	10	0	0	11	6
1 in. by 7 in. do. do. do.	0	11	6	0	13	6

6-in. at 6d. to 9d. per square less than 7-in.

JOISTS, GIRDERS, &c.

	In London, or delivered. Railway Vans, per ton. £	s.	d.	£	s.	d.
Rolled Steel Joists, ordinary sections	6	5	0	7	5	0
Compound Girders ,, ,,	8	2	6	9	5	0
Angles, Tees and Channels, ordinary sections	7	17	6	8	17	6
Flitch Plates	8	5	0	8	15	0
Cast Iron Columns and Stanchions, including ordinary patterns	7	2	6	8	5	6

METALS.

	Per ton, in London £	s.	d.	£	s.	d.
IRON— Common Bars.....	7	15	0	8	5	0.
Staffordshire Crown Bars, good merchant quality	8	5	0	8	15	0
Staffordshire "Marked Bars" ..	10	10	0	-	-	-
Mild Steel Bars	9	0	0	9	10	0
Hoop Iron, basis price.....	9	5	0	9	10	0
,, ,, galvanised.....	16	0	0	.	.	.
(* And upwards, according to size and gauge.)						
Sheet Iron, Black.— Ordinary sizes to 20 g.	10	0	0	-	-	-
,, ,, to 24 g.	11	0	0	-	-	-
,, ,, to 26 g.	12	10	0	-	-	-
Sheet Iron, Galvanised, flat, ordinary quality— Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.....	12	15	0	-	-	-
,, ,, 22 g. and 24 g.	13	5	0	-	-	-
,, ,, 26 g.....	14	5	0	-	-	-
Sheet Iron, Galvanised, flat, best quality:— Ordinary sizes to 20 g.....	16	0	0	-	-	-
,, ,, 22 g. and 24 g.	16	10	0	-	-	-
,, ,, 26 g.....	18	0	0	-	-	-
Galvanised Corrugated Sheets:— Ordinary sizes, 6 ft. to 8 ft. 20 g.	12	15	0	-	-	-
,, ,, 22 g. and 24 g.	13	5	0	-	-	-
,, ,, 26 g.....	14	5	0	-	-	-
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. by 20 g. and thicker ..	12	0	0	-	-	-
,, ,, 22 g. and 24 g.	13	0	0	-	-	-
,, ,, 26 g.	14	5	0	-	-	-
Cut nails, 3 in. to 6 in.	9	5	0	9	15	0

(Under 3 in. usual trade extras.)

LEAD, &c.

	Per ton, in London. £	s.	d.	£	s.	d.
LEAD—Sheet, English, 3 lbs. & up.	13	10	0	-	-	-
Pipe in coils	14	0	0	-	-	-
Soil pipe.....	16	10	0	-	-	-
Compo Pipe	16	10	0	-	-	-
ZINC—Sheet— Vieille Montagne ..... ton	25	0	0	-	-	-
Silesian	24	15	0	-	-	-
COPPER— Strong Sheet ..... per lb.	0	0	10	-	-	-
Thin ..... ,,	0	0	11	-	-	-
Copper nails ..... ,,	0	0	11	-	-	-
BRASS— Strong Sheet..... ,,	0	0	9	-	-	-
Thin ,, ... ,,	0	0	10	-	-	-
TIN—English Ingots ..... ,,	0	1	2½	-	-	-
SOLDER—Plumbers' ..... ,,	0	0	6½	-	-	-
Tinmen's ..... ,,	0	0	8½	-	-	-
Blowpipe ..... ,,	0	0	9¾	-	-	-

ENGLISH SHEET GLASS IN CRATES.

15 oz. thirds	2⅜d. per ft. delivered.
,, fourths.....	1⅞d. ,,
21 oz. thirds	3⅛d. ,,
,, fourths.....	2⅞d. ,, ,,
26 oz. thirds	4d. ,, ,,
,, fourths.....	3⅝d. ,, ,,
32 oz. thirds	5d. ,, ,,
,, fourths.....	4½d. ,, ,,
Fluted sheet, 15 oz.	3d. ,, ,,
,, 21 oz.	4d. ,, ,,
⅛ Hartley's Rolled Plate	1⅜d. ,, ,,
3/16 ,, ,, ,, ...	2d. ,, ,,
¼ ,, ,, ,, ...	2½d. ,, ,,

OILS, &c.

		£	s.	d.
Raw Linseed Oil in pipes or barrels..	per gallon	0	2	3
,, ,, in drums.....	,,	0	2	6
Boiled ,, ,, in pipes or barrels..	,,	0	2	5
,, ,, in drums.....	,,	0	2	8
Turpentine, in barrels	,,	0	3	4
,, in drums	,,	0	3	6
Genuine Ground English White Lead	per ton	20	10	0
Red Lead, Dry	,,	20	0	0
Best Linseed Oil Putty.....	per cwt.	0	8	0
Stockholm Tar.....	per barrel	1	12	0

PRICES CURRENT (*Continued*).

VARNISHES, &c.

	Per gallon. £	s.	d.
Fine Pale Oak Varnish	0	8	0
Pale Copal Oak.....	0	10	6
Superfine Pale Elastic Oak	0	12	6
Fine Extra Hard Church Oak	0	10	6
Superfine Hard-drying Oak, for Seats of Churches	0	14	0
Fine Elastic Carriage	0	12	6
Superfine Pale Elastic Carriage	0	16	0
Fine Pale Maple	0	16	0
Finest Pale Durable Copal	0	18	0
Extra Pale French Oil	1	1	0
Eggshell Flatting Varnish	0	18	0
White Copal Enamel	1	4	0
Extra Pale Paper	0	12	0
Best Japan Gold Size	0	10	6
Best Black Japan	0	16	0
Oak and Mahogany Stain	0	9	0
Brunswick Black	0	8	6
Berlin Black	0	16	0
Knotting	0	10	0
French and Brush Polish	0	10	0

TO CORRESPONDENTS.

W. D. & Sons (Too late; next week.)

NOTE.—The responsibility of signed articles, letters, and papers read at meetings rests, of course, with the authors.

We cannot undertake to return rejected communications.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

All communications must be authenticated by the name and address of the sender, whether for publication or not. No notice can be taken of anonymous communications.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article is given subject to the approval of the article, when written, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than 10 a.m. on Thursdays.* N.B.—We cannot publish Tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under 100*l.*, unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

CARDIFF.—For new stables, for Councillor Arthur Sessions. Mr. Edgar G. C. Down, architect, 31, High-street, Cardiff. Quantities by architect:—

Thomas & Co.....	£449	Evans & Brothers	£343
Cox & Bardo	365	W. T. Morgan	332
Knox & Wells.....	357	Symonds & Co.*.....	322

CARLTON (Nottinghamshire).—For the erection and completion of New Carlton and Gedling Wesleyan School Chapel on a piece of land situate in Gedling-road, in the parish of Carlton, in the county of Nottingham. Mr. W. H. Higginbottom, architect, King John's-chambers, Nottingham. Quantities by the architect:—

Geo. Caulton	£1,660	Deabill & Co.	£2,370
Pask & Thorpe	2,524	G. T. Lovett	2,335
Thompson & Sons ..	2,464	Cooper & Son	2,320
A. Allcock.....	2,447	Oliver & Son	2,310
Marshall & Coppin..	2,432	T. H. Harper	2,290
G. A. Pillatt.....	2,399	J. Lewin	2,218
Herring & Sons	2,390	T. Barlow.....	2,200
Hutchinson & Son ..	2,376	G. T. Tegerdine* ..	2,098

LEYTONSTONE.—For the erection of the Norlington-road Schools, Leytonstone, E., for the Leyton School Board. Mr. William Jacques, Architect, 2, Fen-court, E.C. Quantities by Messrs. R. L. Curtis & Sons:—

Foster Bros.	£36,744 0 0
Shelbourne & Co.	34,403 7 2
S. Lintern.....	33,459 0 0
Stimpson & Co.	31,770 0 0
Shillitoe & Son	29,950 0 0
P. Banyard	29,546 4 6
Smith & Sons	29,450 0 0
Kerridge & Shaw	28,975 0 0
Lawrence & Son.....	28,928 0 0
Appleby & Sons.....	28,600 0 0
A. E. Symes	27,818 0 0
A. Reed	27,665 0 0
Gregar & Son.....	27,333 0 0
F. & E. Davey	27,154 0 0
W. J. Maddison.....	26,759 0 0
F. J. Coxhead†	26,337 0 0

† Accepted subject to the approval of the Board of Education.

[*See also next page.*

LEICESTER.—For the electric tramways scheme, for the Corporation of Leicester. Mr. E. George Mawbey, M.Inst.C.E., Borough Engineer :—

Blackwell & Co., Ltd., London.—For the supply and erection of overhead electrical equipment and the supply of copper bonds	£23,194 12 2
Ditto.—For the supply and delivery bolts, nuts, and tie-bars	1,921 5 0
Wragg & Co., Ltd., Swadlincote.—For the supply and delivery of stoneware pipes and conduits....	3,368 14 4 (less 2½ p.c. dis.)
Glover & Co., Ltd., Manchester.—For the supply and laying of feeder cables, telephone and test wires, and the supply and delivery of roadway frames and covers	382 1
Dick, Kerr, & Co., Ltd., London, E.C.—For the supply and erection at the Lero Generating Station of engines, generators, battery, boosters and switchboard, overhead travelling cranes, &c.....	28,417 0 0
Yates & Thom, Ltd., Blackburn.—For the supply and erection at the Lero Generating Station of steam-raising plant	9,609 0 0
The Cooper Patent Anchor Rail Joint Co., Leeds.—Supplying and riveting anchor rail joints ..	12s. 3d. each joint.
The North-Eastern Steel Co., Middlesbrough.—For the supply and delivery of steel girder, tramway rails, and fishplates.....	£32,325 18 9
Hadfield's Steel Foundry Co., Ltd., Sheffield.—Supply and delivery of points, crossings, &c., and the construction of lay-outs and special track-work.....	13,041 10 0

[The tenders for cars are still under consideration.]

LITTLESTONE-ON-SEA (Kent).—For alterations, repairs, painting, &c., at the Station Hotel, for Messrs. Edwin Finn & Sons, Ltd., Lydd, Kent. Mr. Thurlow Finn, architect, High-street, Guildford, Surrey :—

Martin & Benstead	£270 12	Ellis Bros., New Romney,†	£223 10
E. Hutchinson	260 0		

LONDON.—For rebuilding the Royal Hospital for Children and Women, Waterloo Bridge-road, Lambeth. Messrs. Waring & Nicholson, architects, 38, Parliament-street, Westminster :—

Higgs & Hill	£34,384	Colls & Son	£32,222
Burman & Sons	33,933	Smith & Son	31,857
Johnson & Co.	39,880	C. Ansell	31,700
Mark Patrick & Son	32,822	Patman & Fotheringham	31,523
Nightingale & Son	32,777	Holliday & Greenwood*	30,949
Appleby & Son	32,770		
F. & H. F. Higgs	32,350		
Marsland & Son	32,244		

MARGATE.—For the erection of engine and boiler-house, shop, office, &c., at Uffington, for the Town Council. Mr. Albert Latham, C.E., Town Hall, Margate :—

Padget	£9,454	Brown & Son	£7,557
Paramor & Sons	9,308	Gann & Co.	7,474
T. T. Denne	8,988	W. J. Adcock	7,416
Smith & Sons	8,963	Denne & Son	7,312
A. Wing	7,768	G. Browning, Canterbury*	6,986
W. W. Martin	7,610		

NORWICH.—For converting Nos. 3 and 5, Magdalen-road into a branch police-station :—
Lincoln & Bush, Norwich* £454

NORWICH.—For extending refuse furnaces and supplying additional boiler at the Norwich Corporation Depôt, New Mills :—
Horsfall Destructor Co., Leeds* £1,600

NORWICH.—For enlarging the buildings to enclose the extension of the destructor, New Mills :—
W. J. Hannant, Norwich* £207

STIFFORD (Essex).—For additions to school buildings, for the School Board. Mr. Christopher M. Shiner, architect, 6, 7, and 8, Crutchedfriars, E.C. Quantities by Mr. G. Silvester, 46, Strand, W.C.:—

J. Brown	£7,350 0 0	E. West	£6,781 0 0
Hammond & Son	7,050 0 0	H. R. Rous	6,697 0 0
Smith & Sons	6,977 0 0	E. Moss	6,290 18 0
S. Parmenter	6,957 0 0	Pavitt & Son	6,225 12 8
Davey, Ltd.	6,914 0 0	Chas. Wall	6,050 0 0
Wm. Potter	6,842 0 0	H. J. Carter, Grays*	5,755 0 0

STOCKPORT.—For the execution of street works, Sandford-lane, for the Corporation. Mr. John Atkinson, C.E., St. Petersgate, Stockport. Quantities by engineer :—

J. Ludlow	£306 5 5	W. H. Eva, 228, Stockport-road, Cheadle Heath*	£264 1
P. & S. Kearsley	276 4 8		
Hayes Bros.	270 11 6		
Gosling & Stafford	270 7 6		

WEST WYCOMBE (Bucks).—For erection of new schools, &c., to accommodate 150 children, for the West Wycombe School Board. Mr. Arthur Vernon, P.S.I., architect, 29, Cockspur-street, London, S.W., and High Wycombe :—

G. W. Stratford	£1,854	John Furness	£1,675
W. H. Siarey	1,818	Hunt & Son	1,638
A. W. Morton	1,810	G. H. Gibson	1,588
Nash & Sons	1,789	J. T. Harris	1,549
F. Chapman	1,714	H. Flint*	1,467

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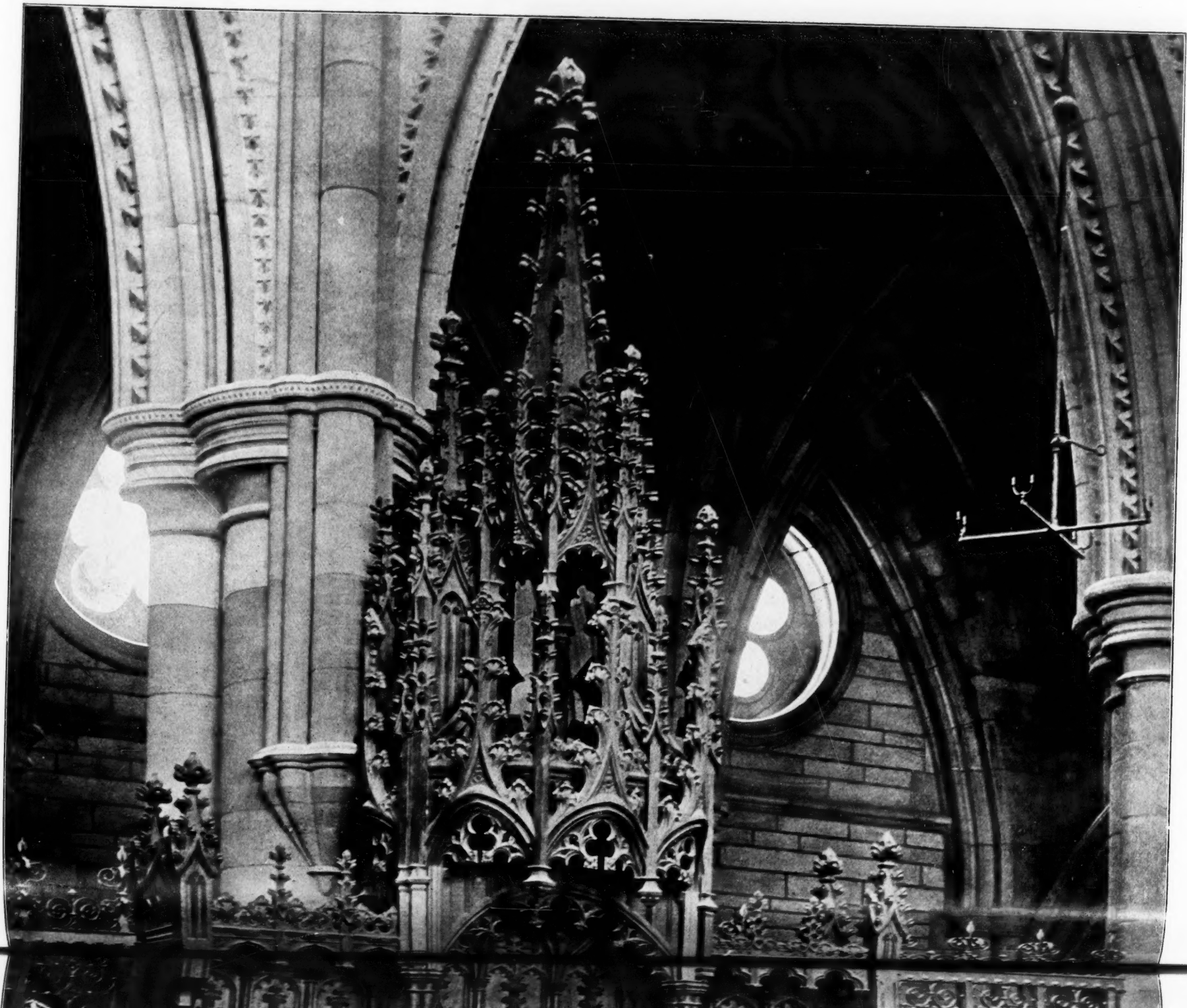

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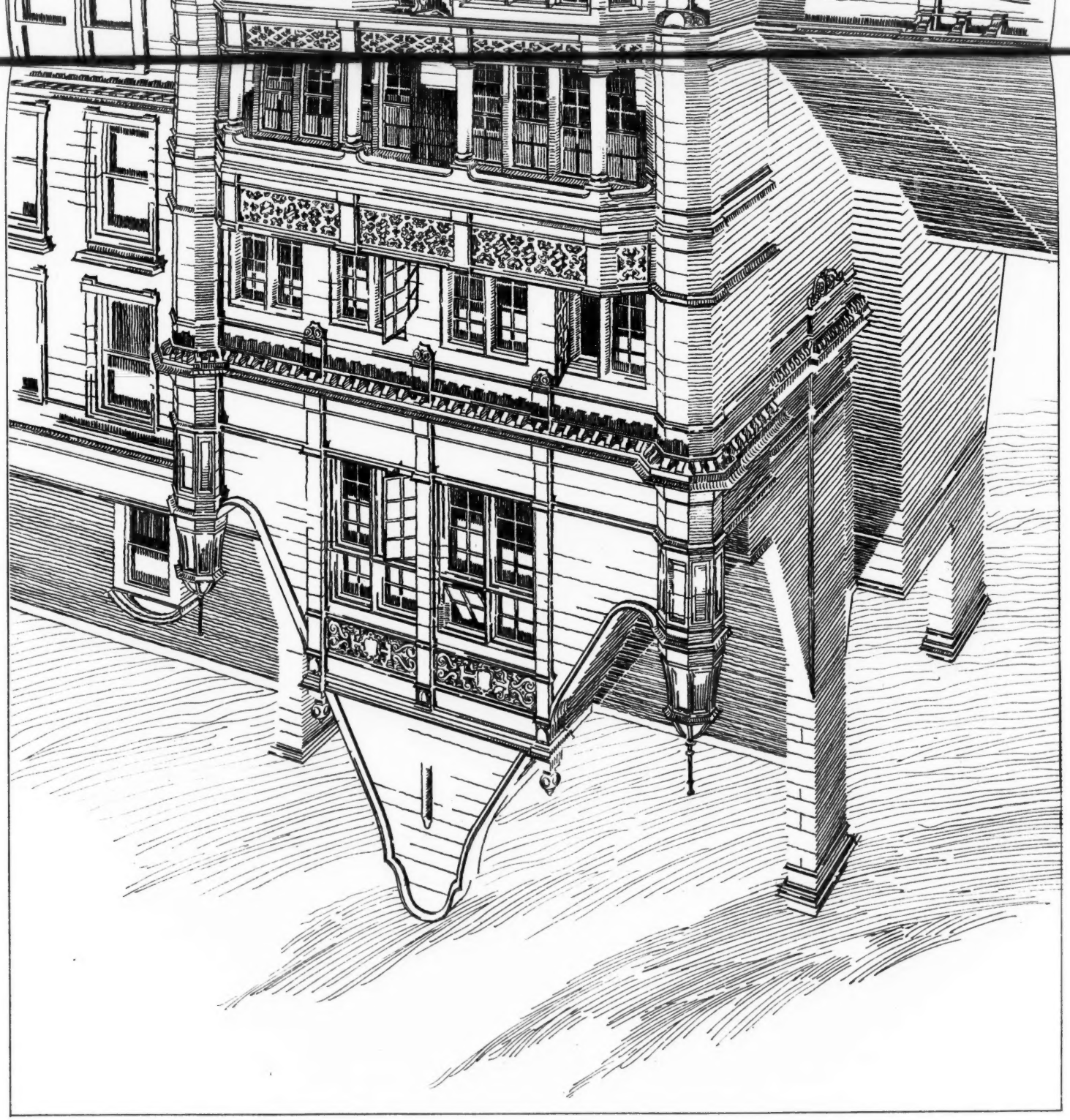

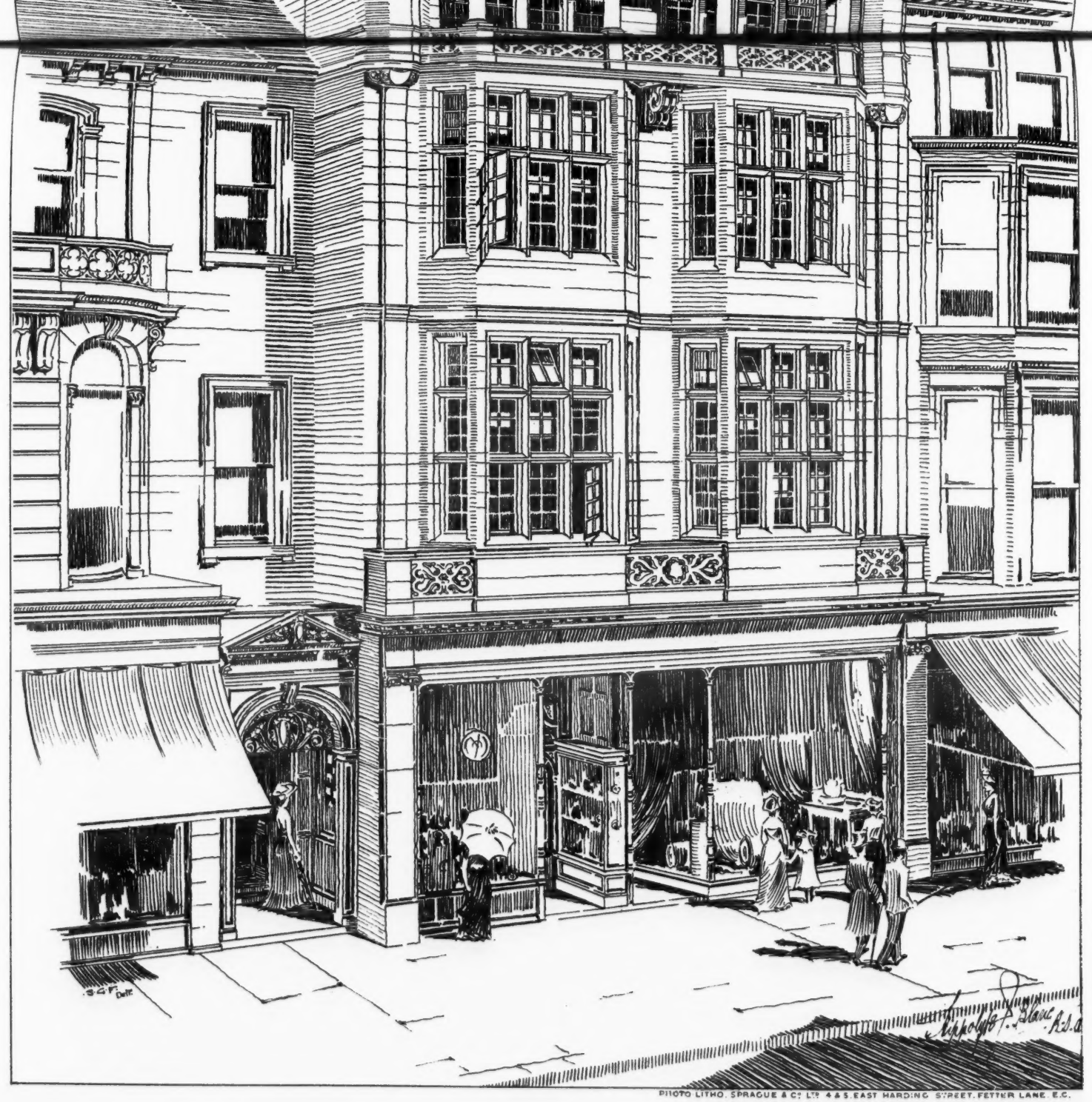

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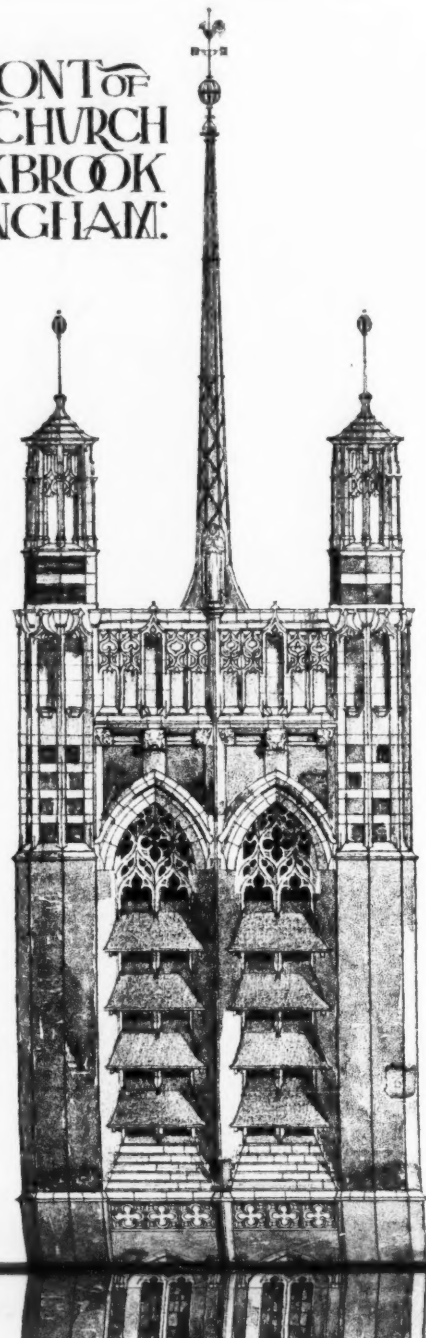

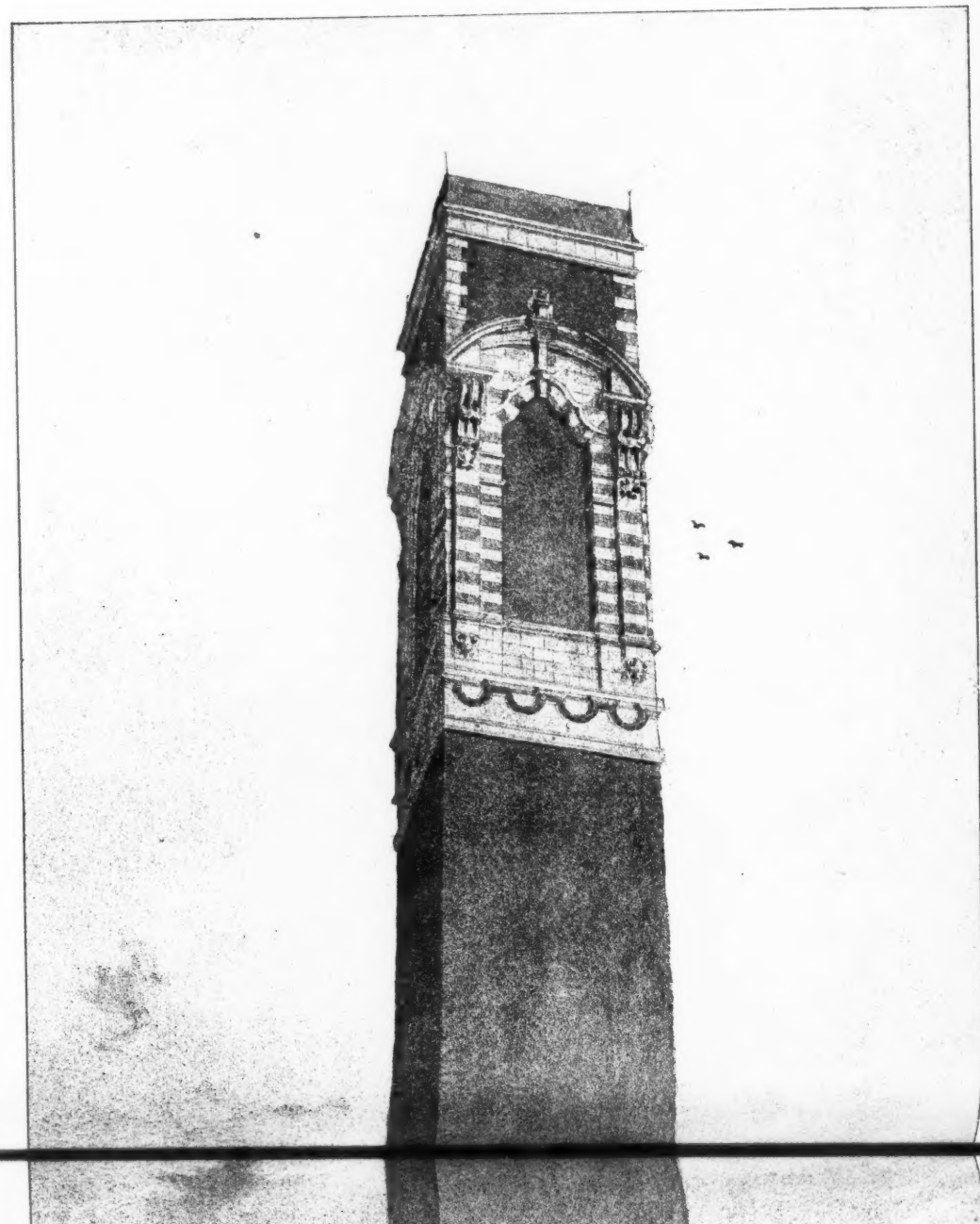

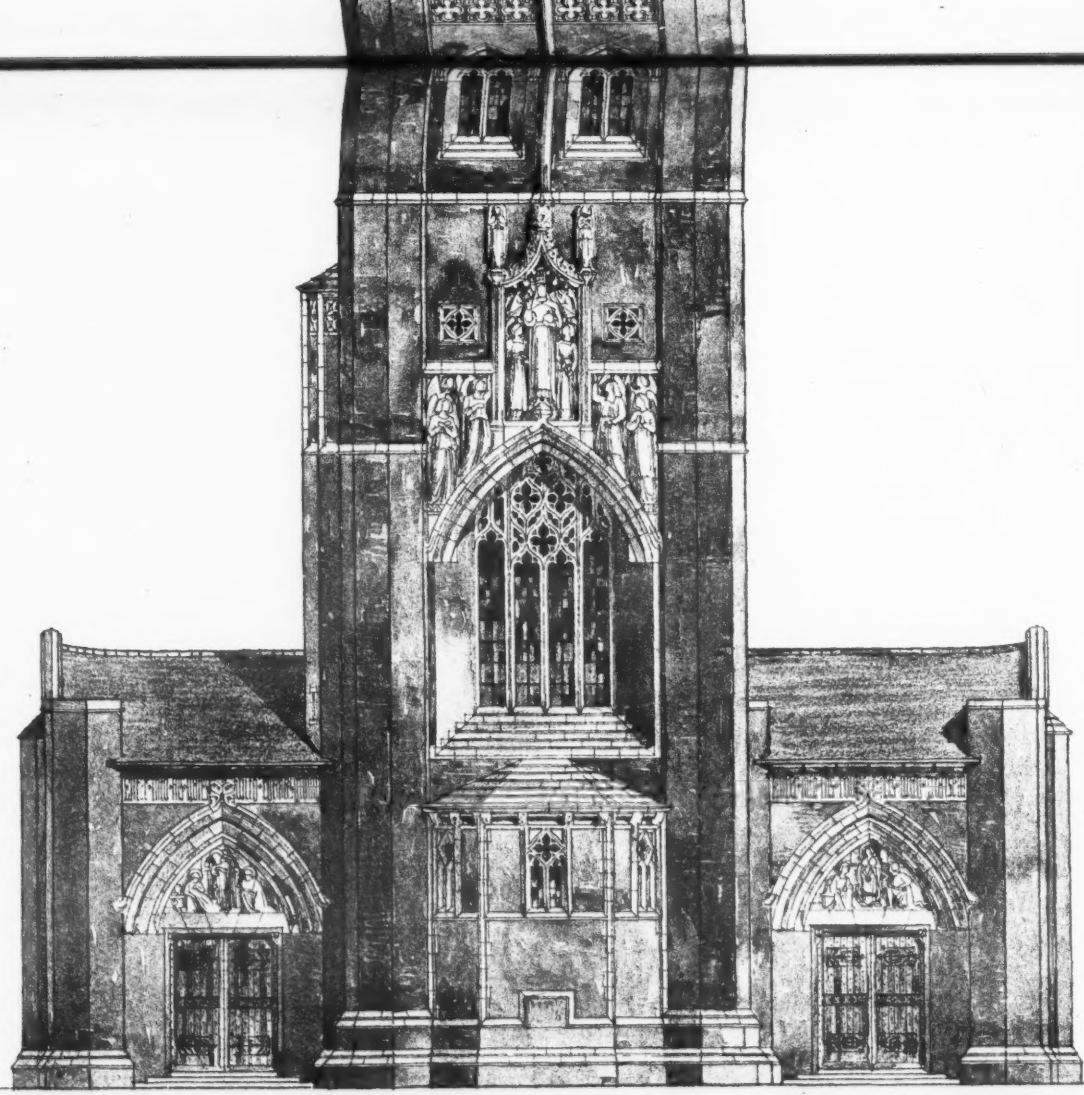

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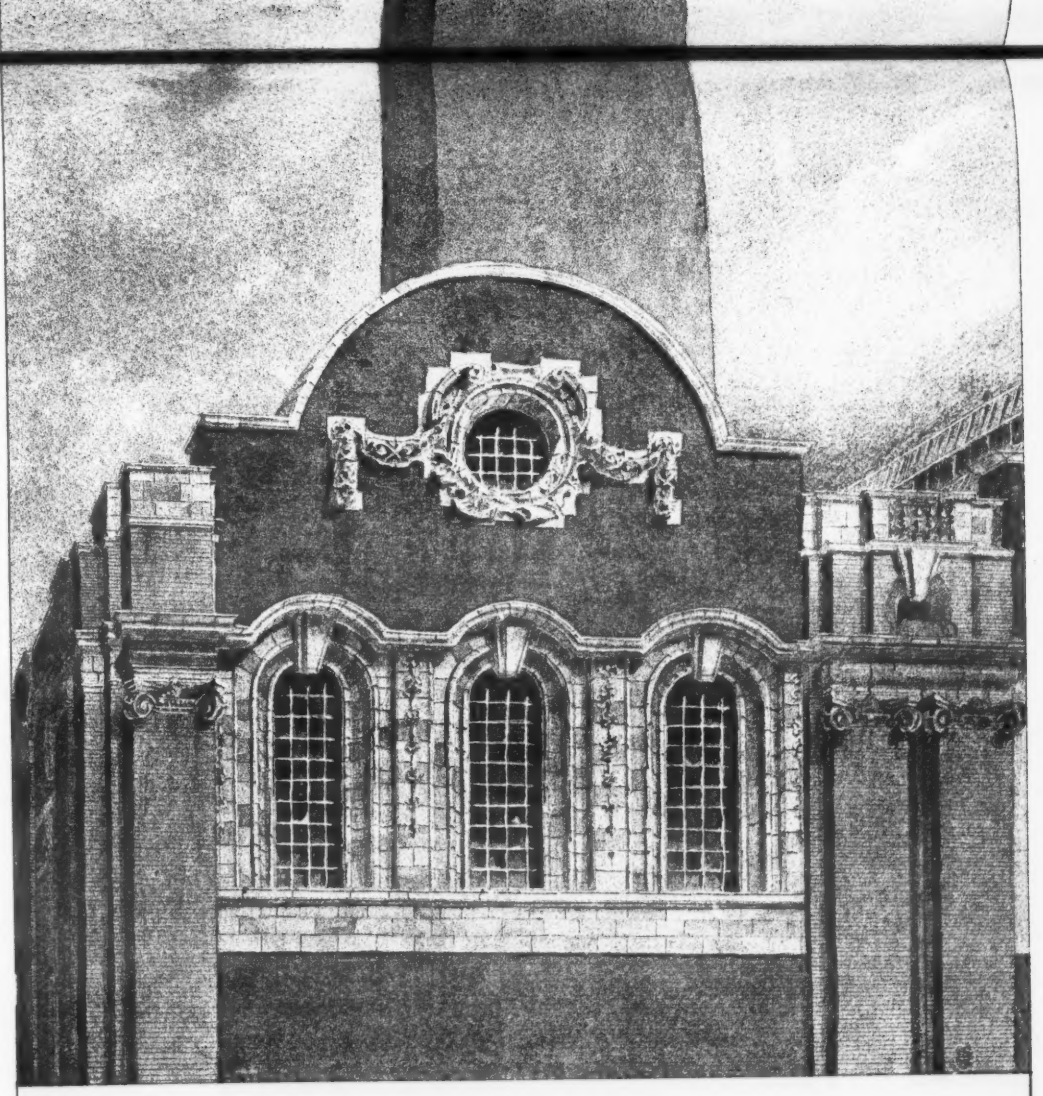

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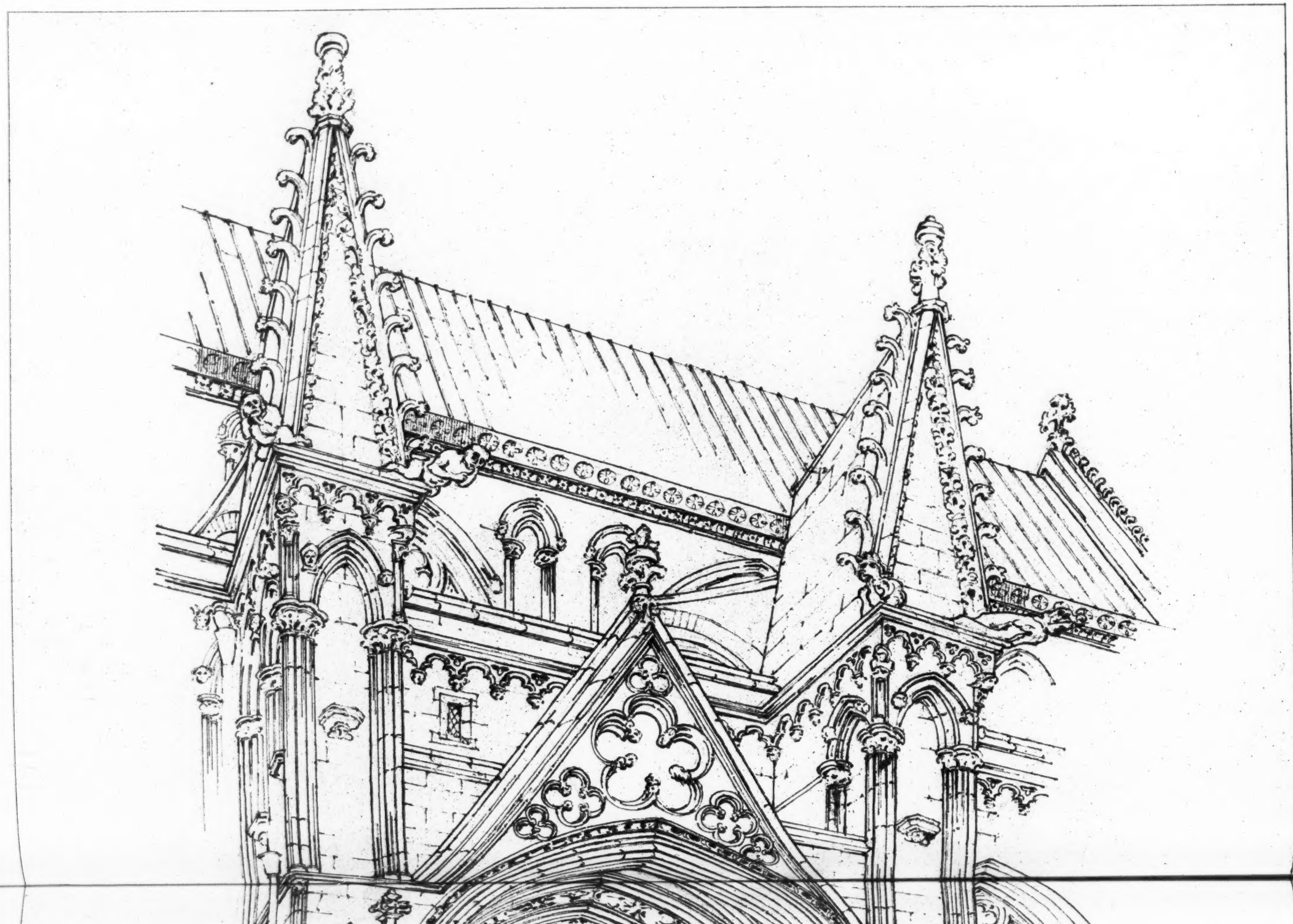

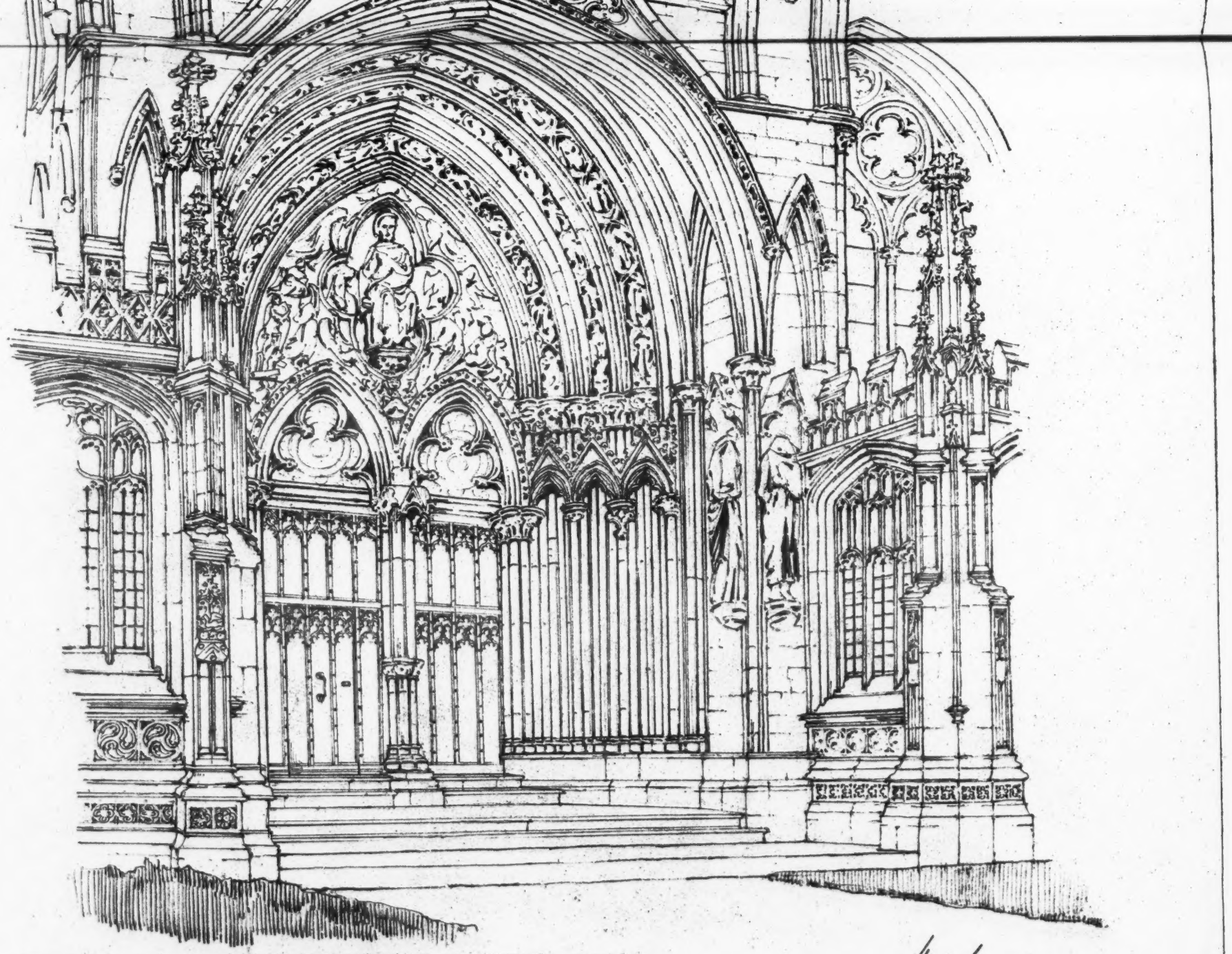

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